MAY 4, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

WILL STEEL PRICES RISE?

Answer: They probably will. But the increases may be the smallest in years—due to the industry's earnest hold-the-line policy. It's determined to clamp the lid on the wage-price spiral. But the odds favor a wage hike of 6 to 11 cents per manhour. That would boost steelmaking costs $2.16 to $3.96 a ton.....Page 37

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Profit Outlook: Metalworking Shoots for a Record Quarter

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Scrapmen Fight the Squeeze

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Indirect Labor: Key to Savings

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Part Is Hardened with Explosives

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Corrugated Boxes Cut Costs of Packaging, Shipping Heavy Loads

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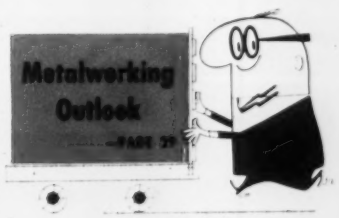
Are Your Inventories Adequate?



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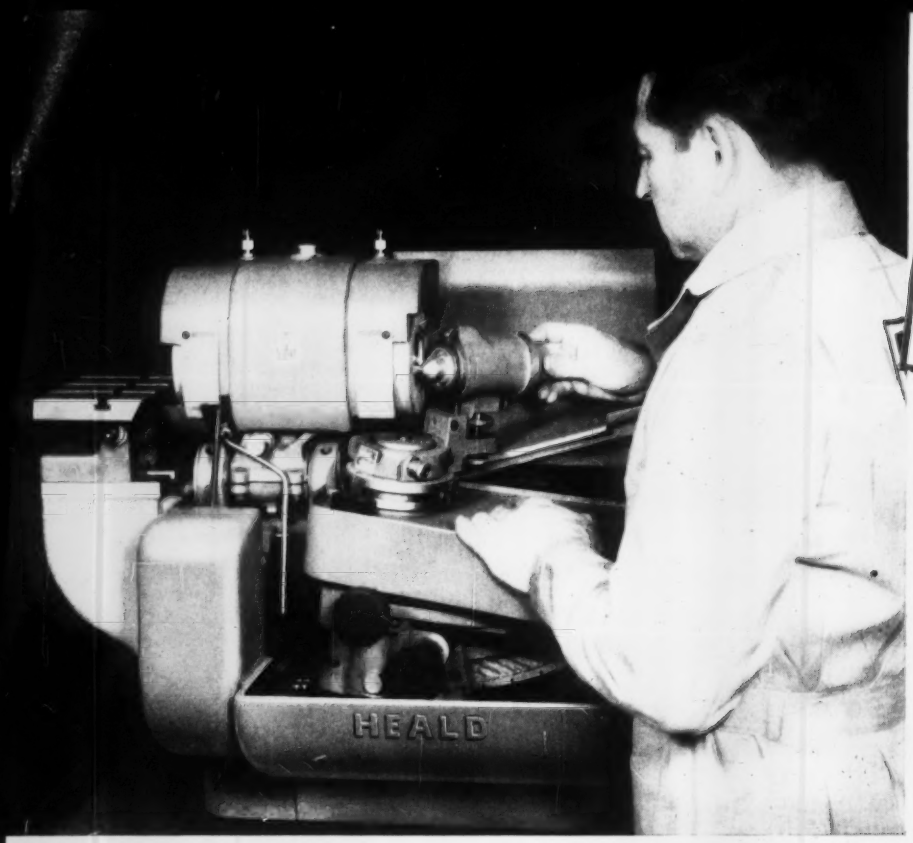


Another **NEW** PRODUCT by Heald

☐ File for Reference
☑ Send for Bulletin

New Model 4 TOOL SHARPENING MACHINE

provides highest precision and economy for both **TRUE RADIUS** and **ELLIPTICAL POINT** tool grinding

SETTING new standards of accuracy and economy, the new Heald Model 4 Tool Sharpening Machine is available for both *true-radius* and conventional *elliptical-point* tool grinding. The True Radius arrangement provides a constant tip radius and constant clearance angle, permitting greater accuracy where the point of contact with the tool varies with the configuration of the workpiece, as in contoured shapes. Where such tool geometry is of no advantage, the Model 3 Tool Sharpening Machine, capable of grinding elliptical point tools only, offers desirable savings in initial cost.

With either model, you get *fully automatic tool reciprocation* providing uniform and repetitive tool tip accuracy which permits one operator to tend several machines at the *same time*. An occasional adjustment of the feed knob (as in photo above) is the only operator attention needed. Offhand grinding attachment at left end of machine is standard equipment, furnished at no extra cost.

Remember—in metal cutting, it's the precision of the *tool tip* that guarantees precision results. Ask your Heald representative for complete information on this new Model 4 Tool Sharpening Machine, or send for Bulletin 2-4-3, Issue 1.

It PAYS to come to Heald

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

BETHCON SHEETS

pass the toughest tests in your shop

You can make snap locks, Pittsburgh lock seams, deep draws, or seamed tubing without damaging either the zinc coating or the steel base of a Bethcon sheet. That's because Bethcon sheets are galvanized by a continuous process which bonds the zinc to the base metal much more tightly than conventional methods.

SPECIAL ANNEALING IMPROVES DUCTILITY

Another advantage of the Bethcon continuous galvanizing process is the remarkable combination of ductility and strength in the sheet, which stems from the special annealing cycle in the continuous line. You'll find a Bethcon sheet neither too soft nor too stiff, but just right for easy workability and a sturdy end-product. The zinc is distributed evenly, so that the finished sheet is uniform in thickness and appearance.

You can specify Bethcon in a wide variety of gages in plain steel or copper-bearing (Beth-Cu-Loy) for extra corrosion-resistance. If you have not yet worked with Bethcon, you might like to talk with someone who has. Or perhaps you'd prefer to discuss it with one of Bethlehem's experienced representatives. You'll get prompt attention by getting in touch with our nearest district sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

E. H. WERNER, *Production Control Manager, Lamson & Sessions, tells why...*

It's costly to be close-mouthed in ordering fasteners

THE more "specifics" you give us about your fastener needs, the more headaches and money we can save you. For example:

What quantity is required . . . and when? To give you economical production runs, using the most efficient tooling methods, we need specific information. Give us *realistic* quantities — how many must be shipped by a given time—what you expect future usage to be—delivery intervals required. This gives you maximum economy.

What are the physical requirements? Give us the "physicals" and let us recommend the suitable material. When prints specify a steel not commonly used, it must often be procured at a premium, which adds to your cost.

What are the critical dimensions? Close tolerances invariably add to cost. If you indicate which non-critical dimensions might be modified—radii, angles, fillets, lengths, outside and inside diameters, concentricity, etc.—we can often eliminate expensive secondary operations.

What quality level is required? This determines whether 100% inspection is necessary, sample inspection is adequate, or only certain dimensions must be inspected.

Take advantage of the specialized experience and facilities available to you through L & S, to save money and headaches on fastener buying.

L & S Fastener Engineering helps you "tighten up" on...

- **PURCHASING COSTS**
- **INSPECTION AND HANDLING COSTS**
- **ASSEMBLY COSTS**

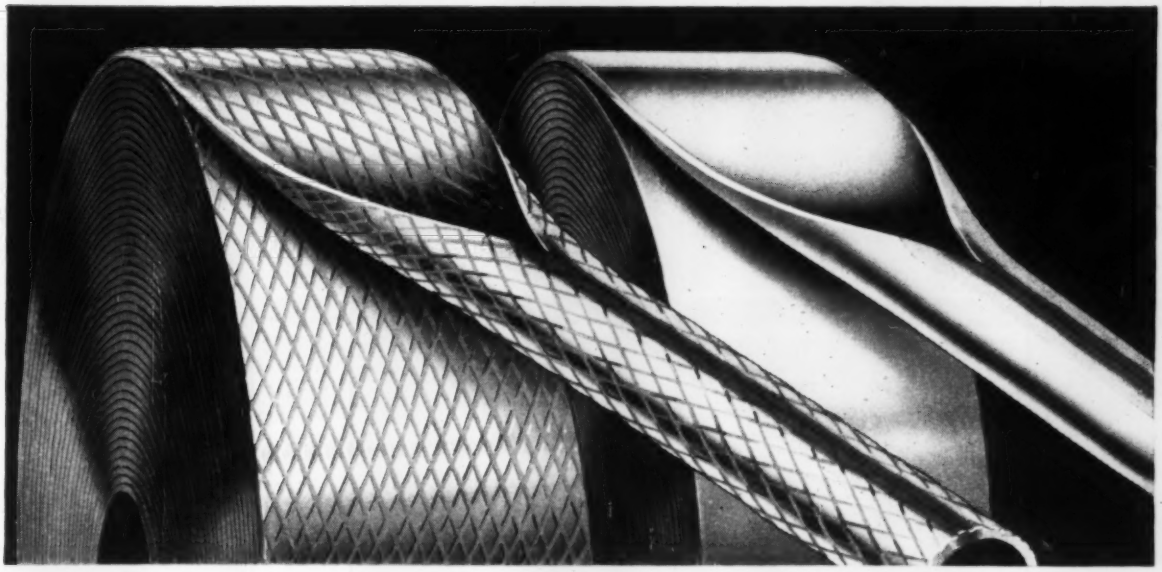
LAMSON & SESSIONS

5000 TIEDEMAN ROAD · CLEVELAND, OHIO

Plants in Cleveland and Kent, Ohio · Chicago and Birmingham

Now... Aluminum Tubing... plain or patterned...Welded

with TOCCO* *High-Frequency Heating*



Quaker State Metals Company, leading fabricator of aluminum building products, recently installed a 25 kw, 450,000 cycle TOCCOtron vacuum tube oscillator for continuous welding of aluminum tubing. Both plain and patterned strip, anodized or untreated according to end-use requirements, is continuously welded. Diameters vary from ½" to 1" O. D. and wall thicknesses from .024 to .064".

The weld is absolutely uniform throughout the entire length, assuring a dependable, strong bond. The whole operation is so smooth and quiet, you hardly know it's running.

Aside from the perfect weld, for the ultimate in product quality, TOCCO Induction Welding, being a completely automatic process, saves time and money over many conventional joining methods.

Remember, whether *your* products are of ferrous or non-ferrous metals, TOCCO can almost certainly save *you* time and money in heat-treating, brazing, welding, or hot forming operations.

***Mail Coupon Today*— NEW FREE Bulletin**

The Ohio Crankshaft Co. • Dept. S-5, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Heating".

Name_____

Position_____

Company_____

Address_____

City_____ **Zone**____ **State**_____

HAPPY LATHE SALESMAN:
"This new 50" LeBlond sold for more than $100,000!"
O. W. "DOC" SHULL, Sales Engineer
Technical Equipment Sales Co.
LeBlond Indianapolis Distributors
HAPPY LATHE BUYER:
"We figure our new LeBlond will pay for itself in 3½ years!"
R. O. BERTSCH, Vice President
Bertsch & Co.
Cambridge City, Ind.
SALES MESSAGE:
Having a new LeBlond is a lot better than having the cash. Where else could you get a 30% per annum return on a blue chip* investment? Where else but at your LeBlond Distributor's. See him today!
*LeBlond's lasting value is acknowledged everywhere.
THE R. K. LeBLOND
MACHINE TOOL COMPANY
Cincinnati 8, Ohio
LeBLOND
of Cincinnati

This Week in STEEL The Metalworking Weekly

May 4, 1959
Vol. 144 No. 18

EDITORIAL 35

The campaign to shatter business roadblocks should not be limited to Massachusetts.

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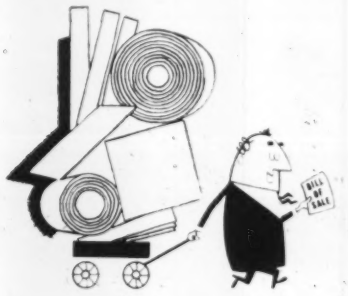

$¢ $¢ $¢ $¢ $¢ $¢ $¢ $¢ $¢ $¢

The dollars and cents added to steel prices every time a wage increase is granted causes nationwide concern. Steelmakers haven't been able to hold the line, but a STEEL study shows they have slowed the rate of increase in a ten-year battle of the bulge.

WINDOWS OF WASHINGTON 48

Roll call vote is about your best guide to the power of organized labor in the U. S. Senate.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

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Pipe and Tube Mills

Product dependability—integrity of manufacture—engineering for specific production needs have all contributed to establish Yoder equipment as the industry standard of excellence. Since 1909 Yoder-built machinery, including Pipe and Tube Mills, Roll Forming Equipment and Rotary Slitters, have earned world-wide customer satisfaction and recognition.

Profit from Yoder's years of engineering and service experience. Send today for the illustrated Yoder Pipe and Tube Mills Book.

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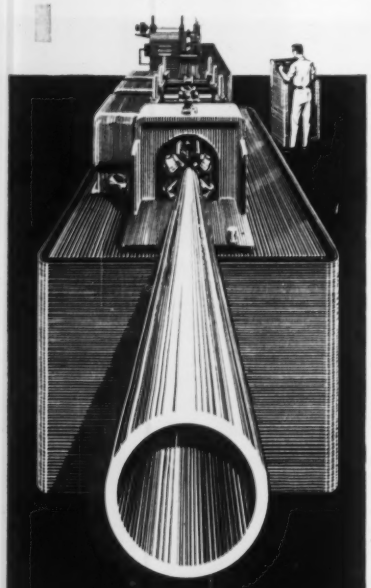


ENGINEERING YODER MANUFACTURING

PIPE AND TUBE MILLS
(ferrous or non-ferrous)
COLD ROLL FORMING MACHINES
ROTARY SLITTING LINES

behind the scenes

Meet the Raise, or Call?

The dread possibility of a steel strike doesn't engage the interest of economists quite so much as the possibility of a hike in steel prices. Judges on their benches, politicians on the floor, bankers in their vaults, the president on the green, workers in their mortgaged automobiles, and preachers in their pulpits shudder together at the thought of a new inflationary spiral. They reason that when the price of steel goes up, the price of everything else goes up, leaving them, and you, and us wearing foolish expressions, holding anemic dollars, and wondering why the roof fell in.

Steelmakers are under terrific pressure to hold the price line, even if they are forced to accept increased costs. They are the victims of a peculiar American institution that recognizes everybody in the bleachers as management experts. The plain, demonstrated fact is that a necessary hike in steel prices has no appreciable effect on the general economy, but nobody can believe it. (From testimony given to Senate investigation committee by U. S. Steel Corp. Chairman Roger Blough.)

The immediate danger of a steel price hike lies in the precedent it may set.

Making Everything Clear

When you are caught up in it, inflation is an extraordinary phenomenon. If you could view it from the grave or from a distant star (where it couldn't possibly affect you), it is absurdly simple. It is a disproportionate increase in the quantity of money or credit relative to the amount of exchange business. Men can cure it by long range planning, but the cure involves short range surgery, meaning plenty of cutting—and can you imagine this land of the free and home of the brave inviting a nationwide wage cut?

The elements that cause inflation are plain to see, but they are pretty slippery. When you think you have grasped one idea, two others get away from you. If you are one of the many millions staggering along under misconceptions regarding inflation, permit us to set you straight. We take you now to a copy of *The Monthly Business Review*, a publication of the Federal Reserve Bank of Cleveland. We have always stood in awe of the crystal verbiage of banking Johnnies, and it's our own fault if we haven't been instructed.

"As the degree of monetary ease was gradually reduced," said the bank, "both long and short term rates increased dramatically. While Federal Reserve actions to avoid inflationary excesses during the recovery were probably a factor, the continued availability of the free reserves in the banking system and the moderate degree of restraint point to other forces as major causes of the sharp rise in rates since midyear. The upsurge of the business recovery was apparently projected into the future along with anticipations of further inflation."

There, now! Ain't you glad we stole this clipping for you? You are now qualified as an expert on inflation—so go ahead and read STEEL's outlook for steel price hikes (Page 37) and then tell your congressman where you stand on inflation.

Horrible Thought Dept.

Cometh now Henry J. Sidford, director of advertising and sales promotion, Behr-Manning Co., a division of Norton Co., Troy, N. Y. Mr. Sidford, being duly sworn, declares that he witnessed in this space on Apr. 13, 1959, some printed remarks about one of his company's advertisements featuring the firm's Metalite abrasive cloth. The page was coated with abrasives, prompting a gentleman from Baltimore, Kenneth W. Fowler, to inquire whether the sand fouled up the printing machinery.

"You report that the pages were inserted by hand," said Mr. Sidford, referring to the fact that the sand did, indeed, tend to bind in the bindery. "Your pressman says he's glad the page didn't bleed. Think of the fix he'd be in if an adhesive manufacturer ever tried this stunt!"

Well, sir, even if such an ad were paid for in advance, we'd all be stuck.

Steel Center Shifts

Statisticians recently divided people, tons, capacity, production, distribution, square miles and other odds and ends, and revealed a new answer to a changing situation: According to their figures, the geographic steel center of the U. S. lies in Spencerville, Ohio, a pleasant little community over near the Indiana line (see Page 41). Maybe Spencervillites (we certainly mustn't call them Spencervillains) take more pride in Ft. Amanda, a state monument 5 miles outside of town, than in their new honor, and who can blame them? A decade from now, the geographic steel center will be in Indiana—but Spencerville will always cherish Ft. Amanda.

Shrdlu

(Metalworking Outlook—Page 29)

Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

Stands to reason that the leaders in forge manufacture for over 60 years should be the best source for forge repair.

Regardless of who made it, or how badly it's cracked, broken or worn, your forging hammer will recover most quickly at Erie Foundry's Rebuilding "Hospital". Write for the complete story.

ERIE

THE WORLD'S GREATEST NAME IN FORGING SINCE 1895

ERIE FOUNDRY CO.
ERIE 2, PA.

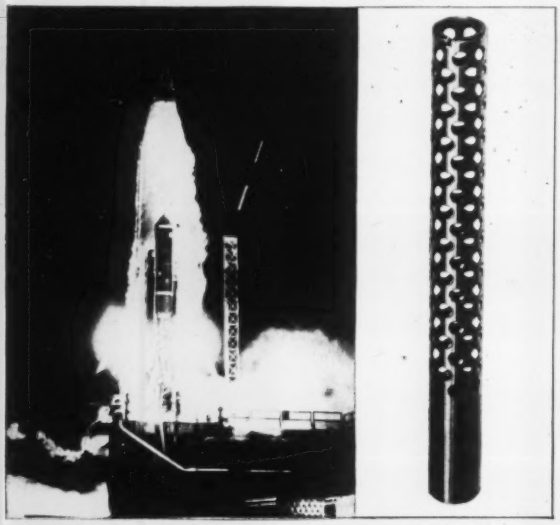
EF-59-02

BISHOP Tubular Products NEWS

"METALS FOR PRECISION AND PERFORMANCE"

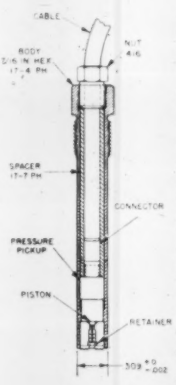
BISHOP QUICK SERVICE TEAM SOLVES STICKLER IN ATLAS PROGRAM

Telemetering bulb part (illustrated)—originally of 304 seamless tubing—cracked during fabrication. BISHOP specialists were called in—304L seamless, ½ hard was recommended and supplied (against a tough deadline). *Results:* The 304L part met all requirements, including critical resistance to vibration fatigue within a temperature range of -80° to +380°F in inert helium, and gave completely satisfactory performance in the Atlas program. More information on 304L—or any BISHOP tubular products? Use the coupon.



BIMETALLICS NOW AVAILABLE IN MANY DIFFERENT FORMS, METALS

Bimetallics—the new family of composite metal products—is solving problem after problem these days. BISHOP capabilities in producing bimetallics are almost endless. Both *base* and *precious* metals are available in wire, sheet, and tubing form. *Typical example of popular bimetallic for glass sealing applications:* nickel-iron alloys over copper wire in sizes from .004 to .125 in. diameter . . . advantages: *low* electrical resistivity, *good* thermal conductivity. Look into the possibilities of improving *your* products . . . use the coupon.



17-7 PH* TUBING BEING DRAWN TO HYPODERMIC SIZE

Small diameter 17-7 PH tubing, welded and seamless, is available from BISHOP now on standard order in sizes down to .375 in. OD X .035 in. wall—on special order to .020 in. OD X .006 in. wall. Accompanying illustration shows a piezoelectric transducer used for measuring pressures up to 100,000 psi in ballistics and hypersonic research work. Use of welded 17-7 PH spacer in transducer permitted finish machining of the part *before* heat treating. Want more data on BISHOP'S 17-7 PH products or other super alloys? Use the coupon.

**Trademark of Armco Steel Corporation*

J. BISHOP & CO.

platinum works

FOR HELPFUL DATA USE THIS HANDY COUPON

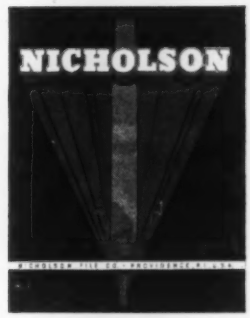
- ☐ **Bimetallics,** Data Sheet PA-1
- ☐ **17-7 PH alloy,** Data Sheet TA-2A
- ☐ **304L alloy,** Data Sheet TA-2
- ☐ **Tubular Products,** Bulletin No. 12
- ☐ **Platinum Metals Products,** Catalog No. 3

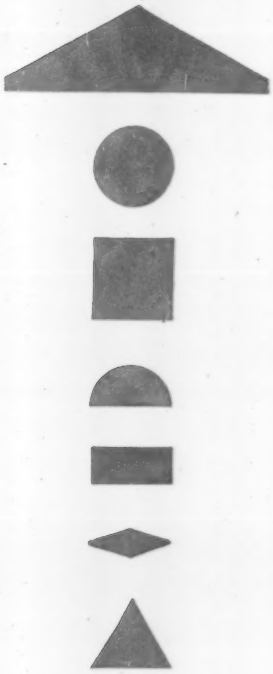
Check information you'd like and mail to
J. BISHOP & CO.,
30 King St., Malvern, Penna.

Name _____
Position _____
Company _____
Address _____
City _____ Zone _____ State _____

Tubular Products Division
30 KING STREET, MALVERN, PENNA.
NIagara 4-3100

THIS IS THE BISHOP LINE:
Products of all the Platinum Metals... Small diameter Stainless Steel, nickel and special alloy tubing





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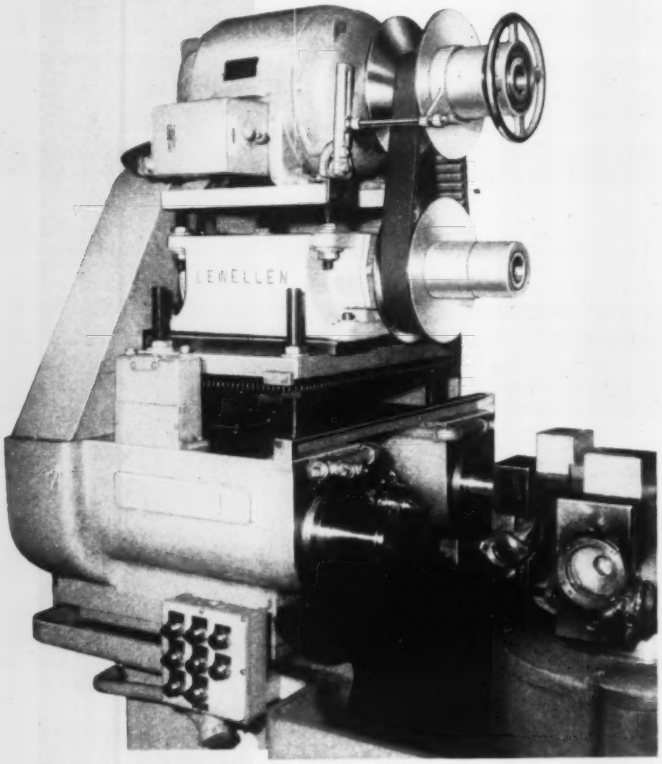
Files and Rotary Burs • Hacksaw and Band Saw Blades
Ground Flat Stock • Industrial Hammers

LEWELLEN

VARIABLE-SPEED POWER PACK



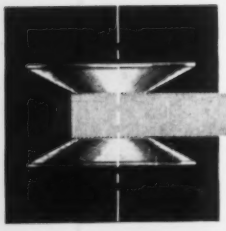
Countershaft, motor and Combination Pulleys provide variable speed unit. Speeds are infinitely adjustable, immediately and conveniently, over wide speed ranges.

Multiple spindle indexing machine illustrates typical application. Flexible operation is accomplished, for productivity, finish, accuracy, and tool life.

Lewellen Combination Pulleys connect any two shafts—directly and compactly apply variable speeds. No supports are required — no thrust loads are imposed.

Speed ranges to 10:1 — ratings to 25 h.p.

Write for our new 400 Series Pulley Catalog 70.



LEWELLEN

Manufacturing Company, Columbus, Indiana

Distributors In All Industrial Areas In Canada—
Peerless Engineering Sales, Ltd., Toronto-Montreal

LETTERS
TO THE EDITORS

Praises Two Articles

Congratulations on "What Now, Mr. McDonald?" (Apr. 6, p. 97). I hope it does the gentleman some good, although I fear he cannot listen to reason.

Also, "The Case of the Vanishing Jobs" (Apr. 6, p. 99) is right to the point. More newspapers and periodicals should preach this "gospel." May I have an extra copy?

Carl R. Brownell
President
G. L. Brownell Inc.
Worcester, Mass

Emotions: A Key Sales Approach

"How to Use Emotional Factors That Trigger Industrial Sales" (Apr. 6, p. 104) will undoubtedly be in great demand. Will you please send four copies to me?

Your efforts in promoting intelligent approaches to the many marketing problems in industrial selling are much appreciated by all of us who must face these problems every day.

W. R. O'Brien
National Steel Corp.
Indianapolis

• • •

This is a most appealing approach to the problem.

Fred W. Donley
Donley Bros. Co.
Cleveland

• • •

This article has attracted favorable comment. May we have three extra copies for wider distribution among our personnel than is now possible with magazine copies?

Hugh Abercrombie Jr.
Advertising Dept.
Mesta Machine Co.
Pittsburgh

• • •

This article is truly a masterpiece. Your staff is to be commended on the presentation of the subject matter. Will you please send me a copy?

A. L. Gould Jr.
Warren Metal Decorating Co.
Warren, Ohio

• • •

I can't recall ever reading a more comprehensive article on this subject. I offer

(Please turn to Page 12)

At Boyertown Auto Body Works, *Youngstown Yoloy "E" Sheets are being fabricated into body sections for their commercial truck line.*

Accent on Excellence

Youngstown Yoloy "E" sheets

True value in Boyertown bodies is the trouble-free, year-in, year-out service they provide. It's a value that starts with skilled craftsmanship—using only the best raw materials available.

Boyertown Auto Body Works, Boyertown, Pa., specifies Youngstown Yoloy "E" Hot and Cold-Rolled Sheets as basic material for both the outside and inside panels, as well as for certain structural frame members such as rear corner posts and roof crowns, of their delivery truck line. They've found this versatile steel's high strength-low weight ratio allows design of higher payload vehicles.

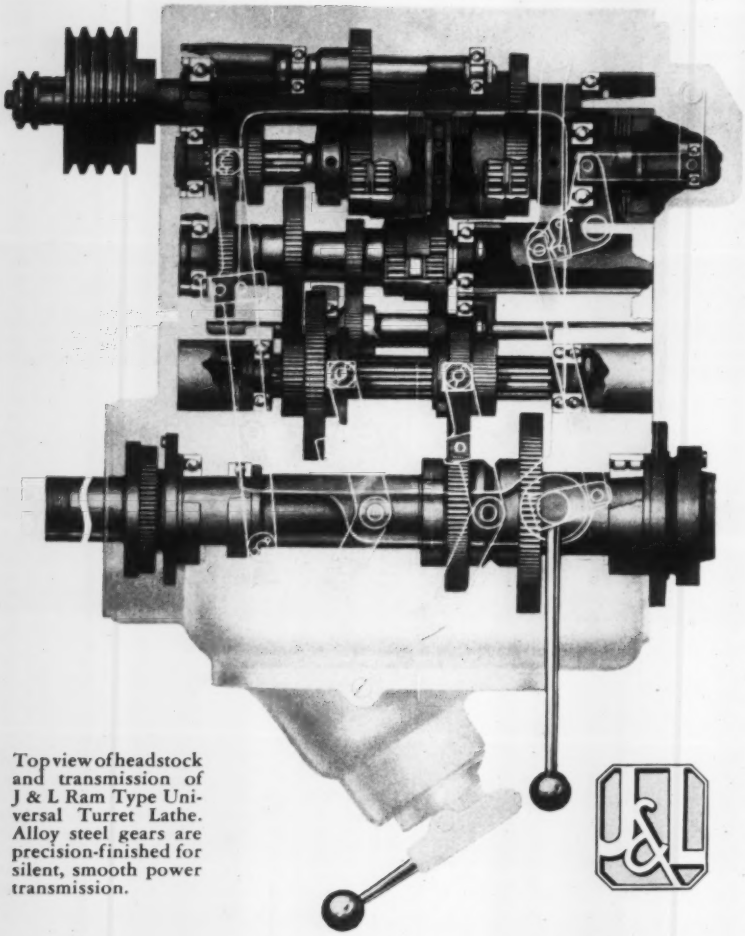
Wherever high-strength steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

Send for free technical bulletin on Youngstown Yoloy "E" Steel.

Youngstown
Youngstown, Ohio

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Carbon, Alloy and Yoloy Steel



Top view of headstock and transmission of J & L Ram Type Universal Turret Lathe. Alloy steel gears are precision-finished for silent, smooth power transmission.

Perkins Gears Used by Jones & Lamson

Jones & Lamson Machine Company, famous as manufacturers of the world's most accurate and powerful turret lathes, use Perkins precision gears for efficient, dependable performance. Perkins custom-cut gears are precision-made to exact specifications. They eliminate wear, noise and backlash. Our OEM customers know Perkins means dependable service and longer gear life. Perkins' long experience in producing precision gears could bring profitable benefits your way, too! Ask our engineers to work with you designing or estimating your next gear order.

WRITE TODAY for folder showing bevel, spiral, helical and spur gears; ratchets, sprockets and ground-thread worms; face gears, generated and curvic clutches; made by Perkins in many sizes from all materials.

Perkins Machine & Gear Co., West Springfield, Mass.

Name_____

Company_____

Address_____

PERKINS

MACHINE AND GEAR CO.

Dept. 3G, West Springfield, Mass.
Telephone: REpublic 7-4751

LETTERS

(Concluded from Page 10)

my sincere congratulations on a job well done.

George D. Meyer
Pittsburgh Athletic Association
Pittsburgh

• • •

We think this is one of the best articles on selling we have read.

E. Griesbaum
Sales Manager
Tubular Products
Laclede Steel Co.
St. Louis

• • •

This is one of the best and most entertaining articles I have seen on the subject. STEEL carries the best type of editorials of any trade magazine we receive, and we all look forward to it.

B. J. Winsett
Non-Linear Systems Inc.
Del Mar Airport
Del Mar, Calif.

A Timely Series

STEEL is publishing a timely series of articles on depreciation reform. If possible, we would like to have ten copies of each: "Depreciation Reform: Bracket Plan?" (Mar. 16, p. 66); "Depreciation Reform: MAPI Plan?" (Mar. 23, p. 72); and "Depreciation Reform: Reinvestment?" (Mar. 30, p. 54).

We have a continuing interest in the subject of depreciation and we would like to use these articles.

Nils R. Hammarskjoid
Office of Tax Affairs
Ford Motor Co.
Dearborn, Mich.

• • •

May we have 18 copies of "Depreciation Reform: MAPI Plan?" Your reprint service has been a valuable one to us on many occasions.

T. F. Eichstaedt
Assistant Manager
Machinery Div.
Joseph T. Ryerson & Son Inc.
Chicago

Selector Constantly Used

I would appreciate receiving several copies of the "Metal Selector" (Oct. 20, 1958, p. 165). This is a fine reference for materials and is constantly in use.

A. L. Eakley
Process Analyst
Convair Div.
General Dynamics Corp
San Diego, Calif.

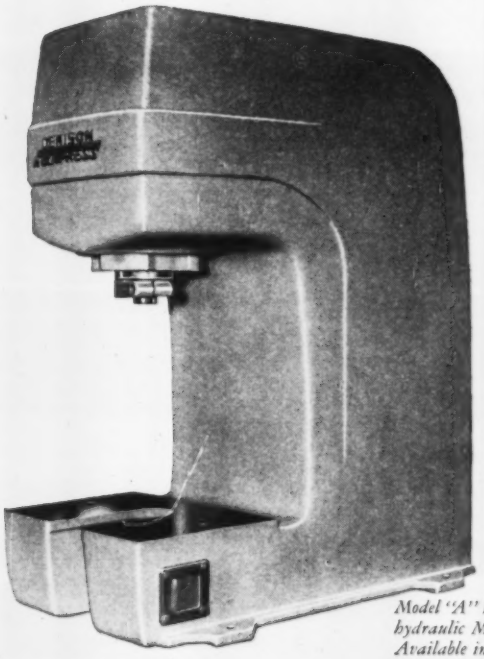
Advised of Interesting Article

We have recently been advised of an interesting article, "How To Select Power Brushes" (Feb. 9, p. 80). Will you please send me a copy?

A. B. Blood
President
W. D. Blood & Co. Inc.
New York

FROM DENISON

a small hydraulic press so productive it...



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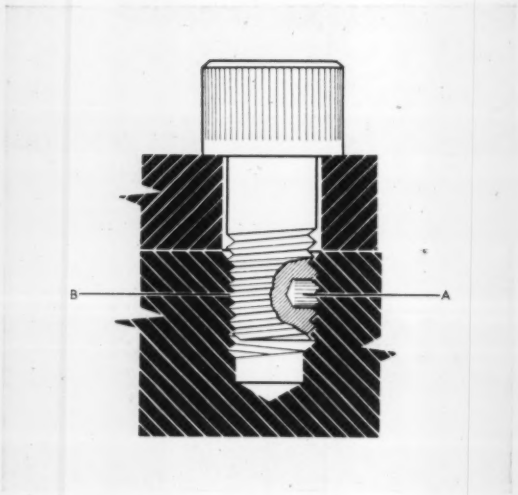

How Nylok locks: Resilient nylon pellet (A) sets up lateral thrust, smoothly wedging mating threads together (B). Locking action is entirely on threads and is positive, seated or unseated. UNBRAKOs with Nylok are easy to remove and are reusable.

Regular screws loosen under vibration because external stresses cause marked variations in screw tension, resulting in motion between mating threads and loss of frictional holding power.

UNBRAKO socket screws with Nylok stay put, because they do not depend on screw tension to keep them tight. Here is how they work: A tough, resilient nylon pellet, inserted permanently in the threaded section of the screw, is the locking medium. Before assembly, the locking pellet projects slightly beyond the crest of the thread. When mating threads are engaged, it is compressed. Its springlike wedging action grips threads tightly and sets up a counterthrust, creating a strong metal-to-metal engagement of the mating threads. Locking is positive whether the screw is seated or not.

And the permanently installed nylon locking pellet retains strength characteristics from −70 to +250 F.

In addition to their remarkable resistance to loosening under the most severe operating conditions, UNBRAKO self-locking socket screws save production time. They eliminate the need for lockwashers under the heads of screws, drilling of heads for lockwires, cotter pins, and complex multiple set screw installations. And they can be used repeatedly without losing their locking ability.

See your authorized SPS industrial distributor for complete details. Or write SPS—manufacturer of precision threaded industrial fasteners and allied products in many metals, including titanium. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.

*T.M. Reg. U.S. Pat. Off., The Nylok Corporation

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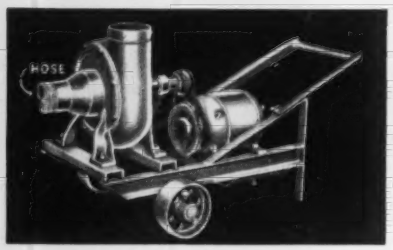
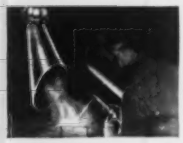
Removes gas, smoke and heat from welding operations. Recommended for ventilation of tank interiors, manholes, vats, airplane fuselages or for blowing fresh air into inaccessible places.



• Collector is equipped with a power unit capable of handling up to 35 ft. of steel tubing. Mounted on rubber tired wheels for ease of handling. Models also available mounted on steel legs for hose operation in a complete 360 degree circle.



• This view shows inlet hood picking up welding smoke. Operator breathing zone protected.

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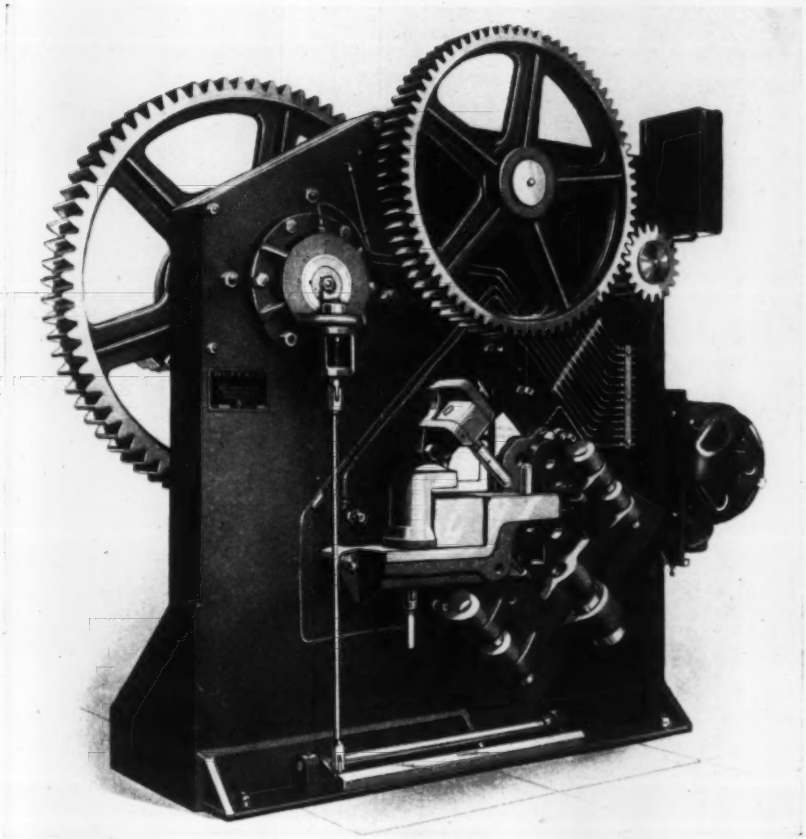

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"Buffalo" Bar Cutters are designed for fast, efficient production. Knife openings are generously-sized. This permits handling a wide range of sizes and shapes without frequent knife changes.

See how "Buffalo" Bar Cutters can cut costs for you. Contact your nearby "Buffalo" machine tool dealer, or send handy coupon.

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(Company)

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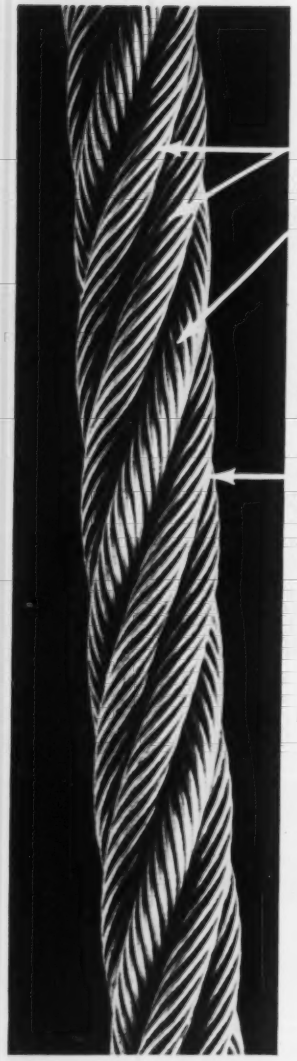
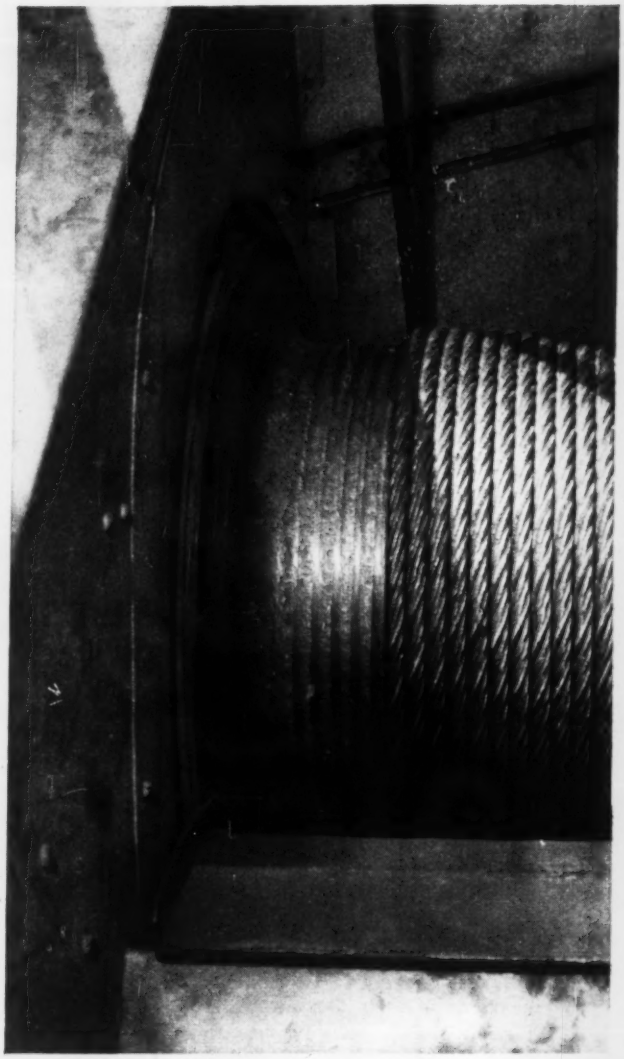


Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.



"... we would never hesitate to recommend it"

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This company continues: "We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."

This is a direct field quote on the most remarkable development in wire rope in years . . . a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope —two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

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TIPS FROM A ROLL MAKER'S NOTEBOOK

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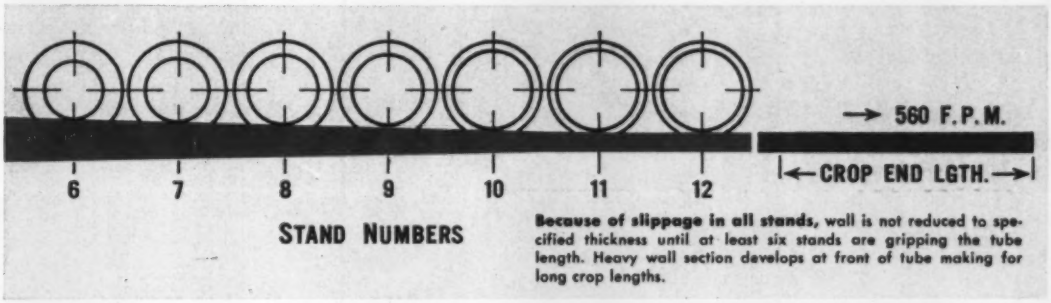
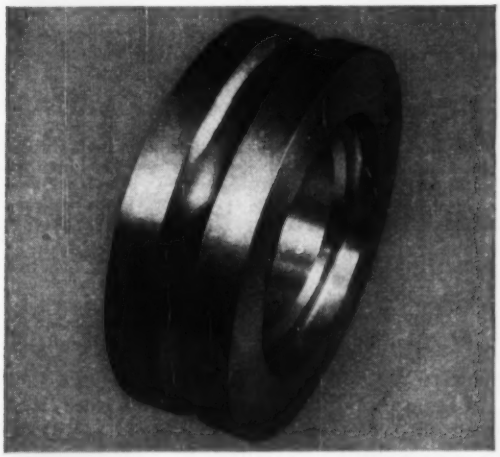
Cast mill rolls • Johnston cinder pots • rotary tube straighteners • end-thrust bearings • heavy-duty lathes • steel and special alloy castings

Balancing bite, slip and wear in stretch-reducing rolls



Because of slippage in all stands, wall is not reduced to specified thickness until at least six stands are gripping the tube length. Heavy wall section develops at front of tube making for long crop lengths.

From the roll maker's standpoint, the stretch-reducing mill is full of contradictions. The rolls must provide good "bite" on the tubing, without squeezing it so hard that it buckles. Actually, this is impossible in a pair of stands: in practice, operators have found that at least six stands are needed before the mill starts to produce any reduction in the tube wall. In other words, so much slippage occurs that the tube length is not being stretched at all before the entering end is gripped by the rolls in the sixth stand.



Roll for early stand of a stretch reducing mill, showing pass. Wear is most severe at sides of passes where slippage is at a maximum.

The greater reductions taken in this type of mill as compared to a sinking-sizing mill, combined with the large amount of slippage, make it imperative that the rolls used show good and uniform hardness penetration. Naturally, extremely high hardness is out of the question because of the necessity for good "bite" in order to develop the tension that stretches the tube. However, uniform hardness over the entire pass makes for even wear, easier adjustment as wear increases, and finally, longer runs before redressing becomes necessary.

Actually, our experience with rolls in this kind of service indicates that wear is most severe at the edges of the pass. Hence, any tendency toward lower hardness at the center of the pass may actually make for a balanced rate of wear over the entire working surface.

Mack-Hemp *Technigrain*® low alloy iron rolls consistently turn in enviable performance records in stretch-reducing mills. In the larger newer mills we recommend our nickel alloy iron *Nironite*® annealed to a low hardness for best possible wearing qualities. Both types are carefully controlled to assure an even hardness penetration, and keep slippage to the necessary minimum even with the relatively high reductions taken in each stand.

Mack-Hemp rolls are serving in every type of mill, from the oldest to the very latest designs. As a result, we are adding constantly to our store of data on roll performance. We are pleased whenever roll users call upon us for advice on matters of roll use and selection . . . if you have a specific problem why not 'phone or write us today?

MACKINTOSH-HEMPHILL

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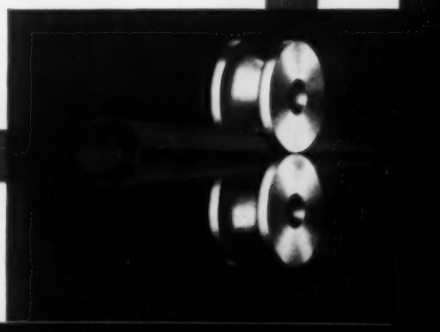


REPUBLIC "50" HIGH STRENGTH STEEL PALLETS

withstand temperatures over 900° at Anaconda Aluminum Company

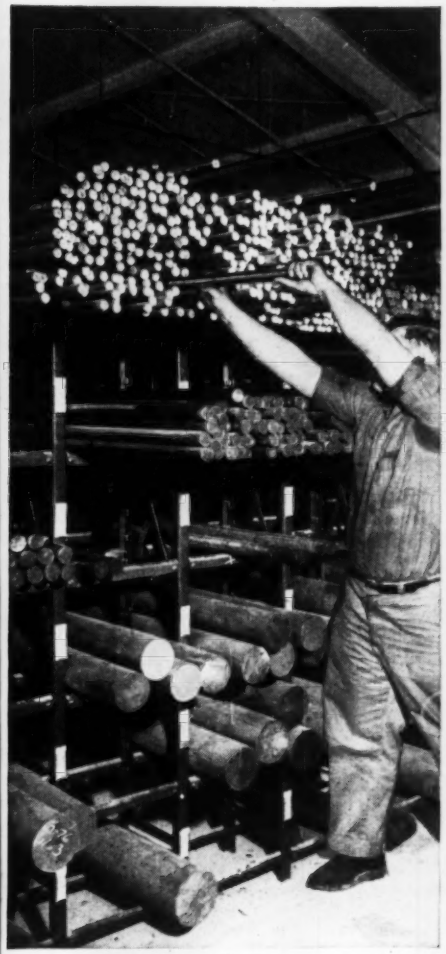
Republic "50" High Strength Steel Pallets solved a particularly severe problem at the Anaconda Aluminum Company, Louisville, Kentucky, world's largest independent producer of aluminum foil.

Twelve-hour annealing cycles of aluminum coils at temperatures over 900° F. caused rapid deformation of the ordinary steel pallets previously used. This deformation damaged the edges of the aluminum coils, resulting in a serious reduction of foil yield. And because deformation of the pallets limited the height to which coils could be stacked, a storage problem was created.

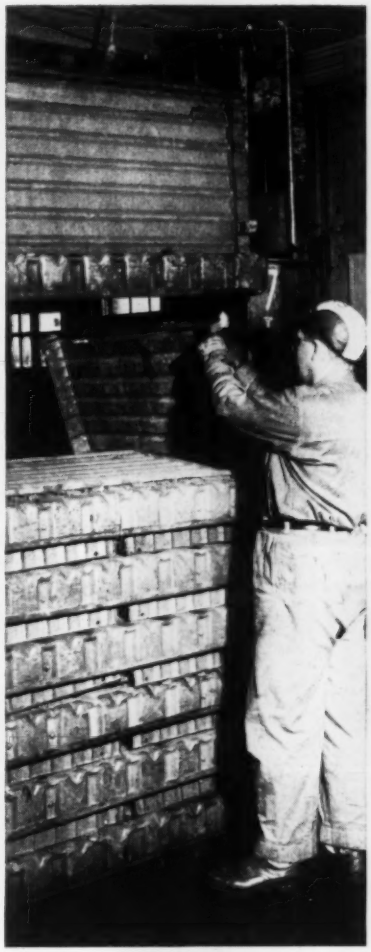
The Republic "50" High Strength Steel Pallets have now been in service for over two years with no sign of deformation. Conservative estimates place the life of the new Republic "50's" at ten years—five times that of previous pallets, with no damage to coils, no lost production time, no wasted materials.

The low alloy steel used in producing Republic "50's" has a minimum yield point of 50,000 psi and a minimum tensile strength of 70,000 psi. It is the combination of basic alloy steel and Republic's extensive heat treating experience that gives these pallets the extreme strength needed for the job.

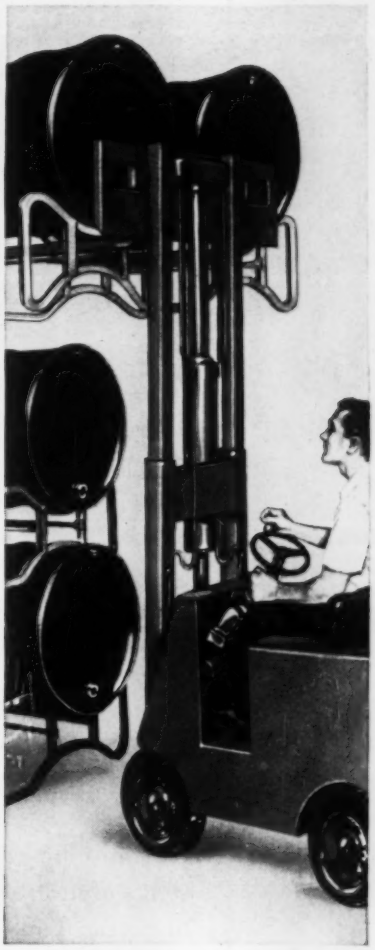
Let the materials handling engineers of Republic's Berger Division work with you in solving your materials handling problems. Call your Republic representative or write direct.



REPUBLIC WEDGE-LOCK® PARTS STORAGE UNITS are easy to load or unload from either side. And, the heavier the load, the tighter the grip, because patented Wedge-Lock construction includes a post that will not buckle; a concealed sway-proof joint; and a reinforced shelf that does not sag. Unlimited shelf arrangements. World's strongest. Capable of exceptionally high stacking. Republic Storage Engineering specialists will help you plan. For complete details mail coupon.



REPUBLIC PB-127 COLLAPSIBLE BOXES lower the cost of storage or shipment of empty stacking boxes. Heavy-duty corrugated design delivers long, efficient service at lowest per-year cost. Boxes can be tiered when loaded or empty, collapsed or set up. All parts permanently attached. Ideally suited to shipping castings and other heavy items, the PB-127 Box offers up to 66% savings in storage space. Send coupon for complete information.



NEW REPUBLIC DRUM RACKS assure stacking of more in-use drums in less space and at lower cost than ever before. Each rack supports two loaded 55-gallon drums. Racks with drums can be stacked to any practical height. Standard fork-lift trucks can pick, move, and stack as many tiers of drums at one time as capacity permits. Shipped knocked down, with fasteners for quick and easy assembly. Send coupon for details.

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☐ PB-127 Collapsible Boxes
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Take your problems to them. Get expert help . . . at the largest display of finishing equipment, materials and processes ever assembled under one roof.

Make a list of your plating problems. Take it to Detroit with you. See the men who man the booths. The experts with professional, up-to-date help for you. They'll be there to demonstrate the right way to solve your problems.

If you want more information on the Fifth Industrial Finishing Exposition *now*, ask the exposition chairman:

HOWARD J. McALEER
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DETROIT 7, MICHIGAN

CALENDAR
OF MEETINGS

May 6-8, American Management Association: Insurance conference, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. Insurance division's manager: E. Garrett Bewkes Jr.

May 9-15, Industrial Diamond Association of America: Annual meeting, Williamsburg Inn, Williamsburg, Va. Association's address: 587A Newark-Pompton Turnpike, Box 175, Pompton Plains, N. J. Secretary: Mrs. Margaret J. McGinnis.

May 10-13, Copper & Brass Research Association: Annual meeting, Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Managing director: Theodore E. Veltfort.

May 11-13, American Management Association: Special labor relations conference, LaSalle Hotel, Chicago. Association's address: 1515 Broadway, New York 36, N. Y.

May 11-13, American Society of Mechanical Engineers: Joint conference with American Institute of Electrical Engineers and Institute of Radio Engineers on automatic techniques, Pick-Congress Hotel, Chicago. Information: ASME, 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

May 11-14, American Mining Congress: Coal Show, Public Auditorium, Cleveland. Congress' address: Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

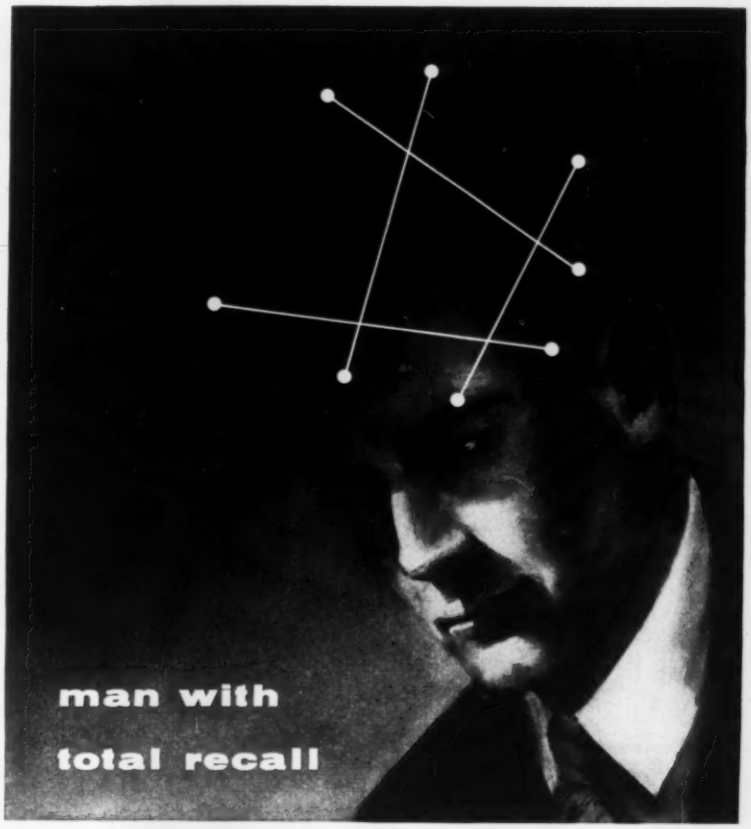
May 12-14, American Society of Mechanical Engineers: National production engineering conference, Statler-Hilton Hotel, Detroit. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

May 13-14, Porcelain Enamel Institute: Midyear conference, Edgewater Beach Hotel, Chicago. Institute's address: 1145 19th St. N.W., Washington, D. C. Managing director: John C. Oliver.

May 13-15, American Supply & Machinery Manufacturers Association: Triple industrial supply convention, Statler-Hilton Hotel, Dallas. Information: Thomas Associates, Keith Bldg., Cleveland 15, Ohio. Business manager: W. B. Thomas.

May 13-15, Machinery Dealers National Association: Annual meeting, Plaza Hotel, New York. Association's address: 1346 Connecticut Ave. N.W., Washington 6, D. C. Executive director: R. K. Vinson.

May 14-15, National Association of Sheet Metal Distributors: Spring meeting, Pick-Roosevelt Hotel, Pittsburgh. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.



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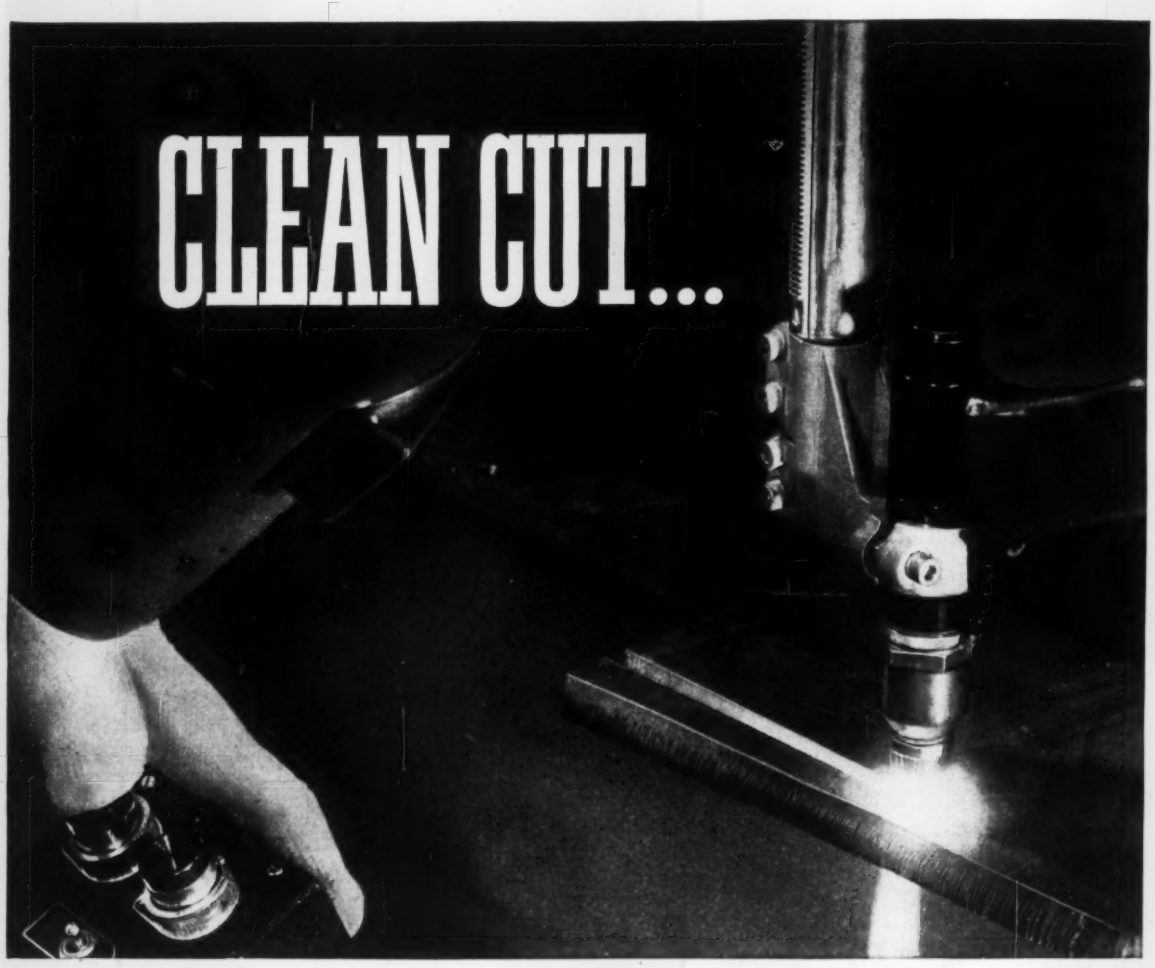

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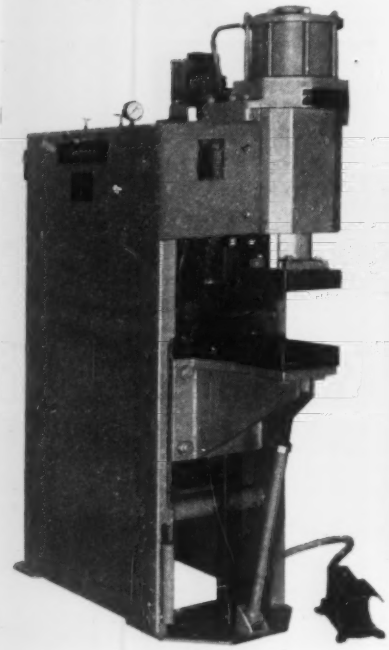
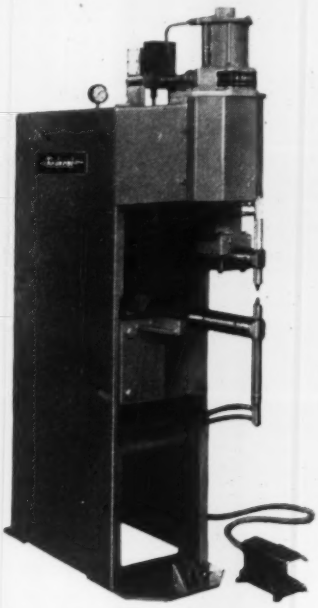
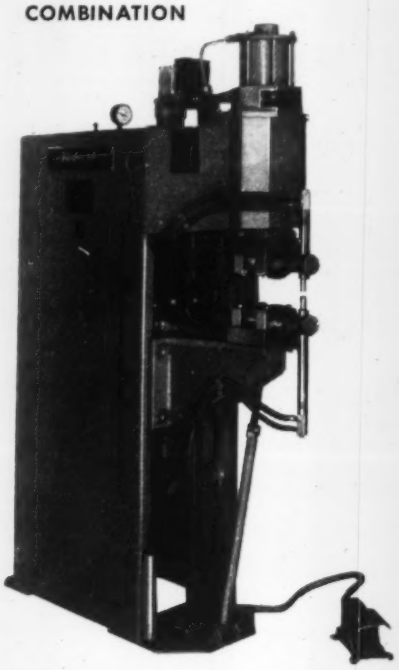


SPOT



COMBINATION



Available from stock in four sizes in capacities of 30 to 500 K.V.A.

Completely new . . . these advanced design trim-line press welders will give you maximum production in a minimum floor area. What's more their compact, simplified design assures easier operation, less maintenance and ready accessibility.

Designed and built by Federal, one of the largest and most experienced resistance welder manufacturers, these new welders are available from stock as spot welders with horns, projection welders with platens, or combination spot and projection welders. Each type is available in a full range of standard throat depths, welding forces and transformer sizes.

Many standard automatic welding attachments are available to increase production with these standard machines.

Listed below are some of the features. For more information get in touch with the Federal representative nearest you. Ask for Bulletin P-59 and Special Tooling Bulletin AWA-59.

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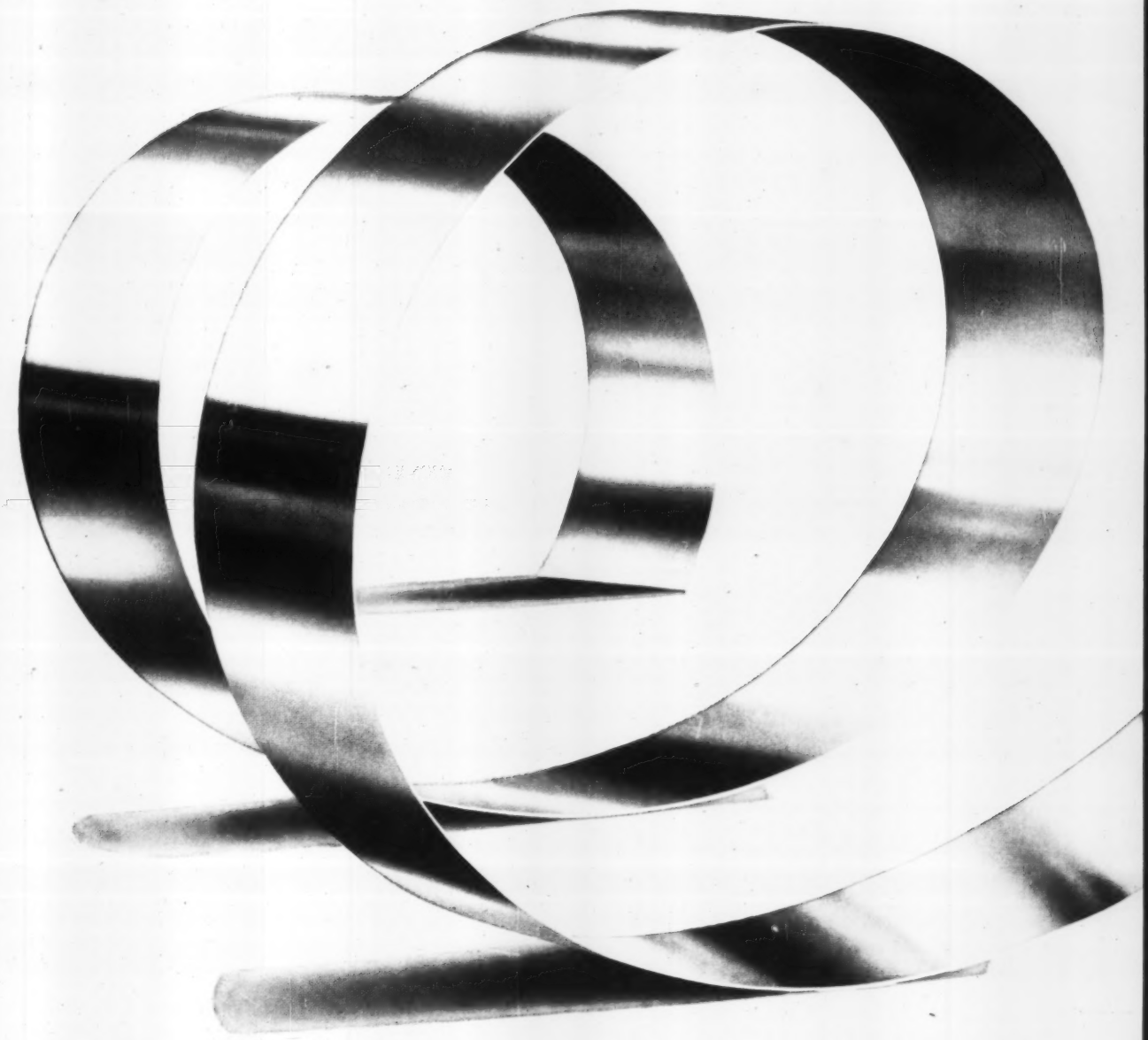

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Coil after coil of Crucible stainless gleams with unsurpassed lustre because it is precision-rolled on modern mills. Furthermore, Crucible maintains uniform qualities by methodically checking each heat — and ensures precise gauge with electronic measuring controls. For stainless in all gauges down to .010" and in all strip widths, call or write: Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

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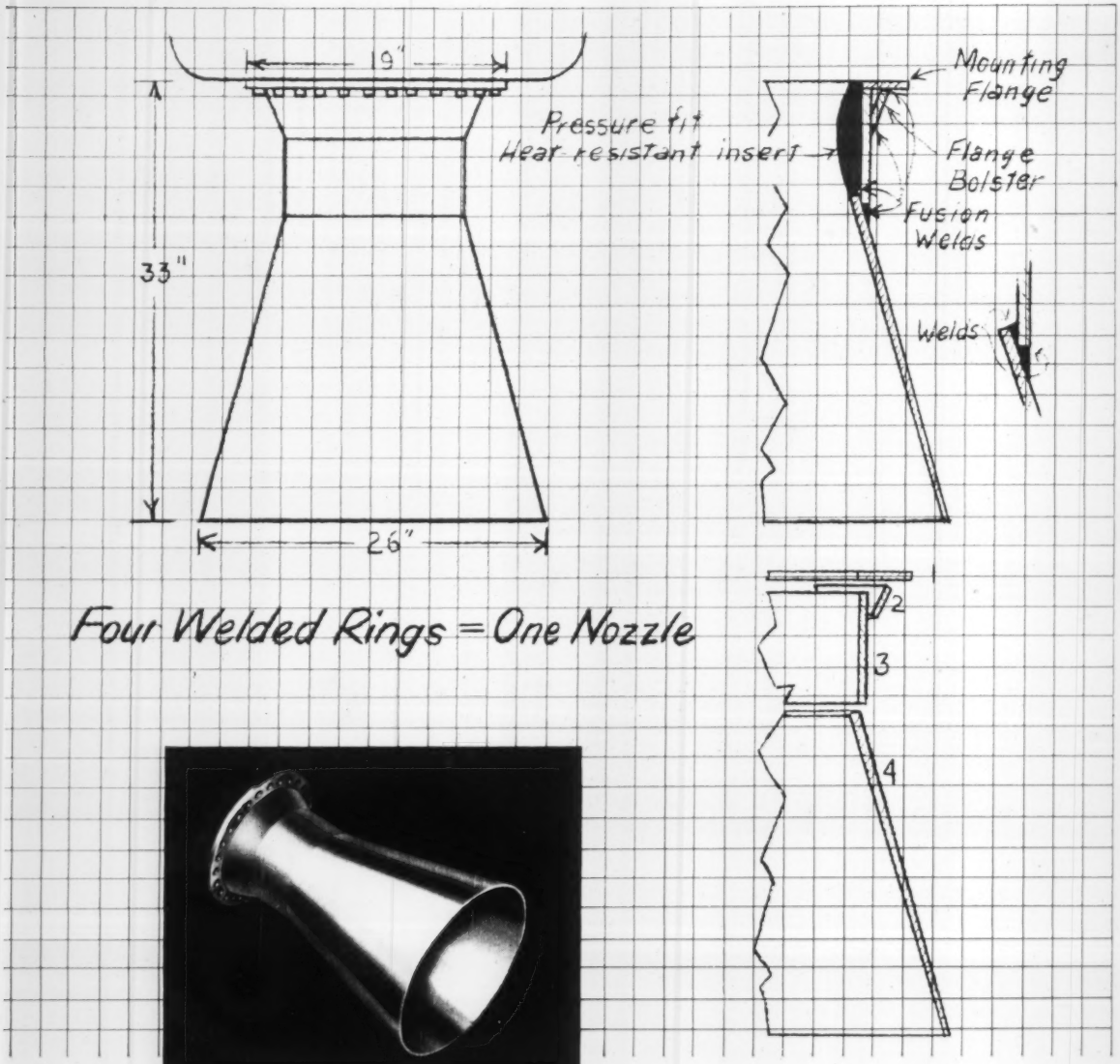

Nozzle cone for 100,000 lb. thrust is a WELDED RING ASSEMBLY with refractory insert

A booster rocket delivers a 100,000 lb. thrust. The nozzle cone—which takes this tremendous punch—is a welded assembly. Amweld engineers, working with a prime contractor, developed a method that simplified the fabrication of this vital part and reduced the cost.

The conical section is rough formed from a single piece of plate, welded, and circular formed. Other sections are torch cut from plate, formed, and welded together to form the completed assembly. After heat treating and machining, a graphite insert is fitted inside the nozzle cylinder.

Delivered at a considerable savings in fabricating and material costs, this Amweld welded assembly meets all requirements for this critical application.

This typical Amweld fabrication by welding can save you time and money. If you would like to know more about Amweld's prototype and production facilities, phone or write.

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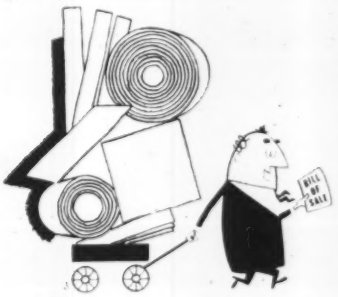
AMERICAN WELDING

STEEL

Metalworking Outlook

May 4, 1959

Will Steel Prices Rise?



Odds are that you'll pay a higher price for steel after midyear. But the increase may be small. The steel industry is trying to clamp the lid on the wage-price spiral by limiting wage gains to productivity improvements. But USW officials have said they want substantially more than that. A 6 cent package would boost steelmaking costs $2.16 a ton. An 11 cent hike would raise costs $3.96 a ton (Page 37).

Wages Outdistance Prices

Here's proof that wages rose faster than prices during the last 12 months. In March, 1958, the average factory worker with three dependents had purchasing power equal to 116.5 per cent of the 1947-49 average. In March, 1959, his buying power had increased to 124.7 per cent—0.6 per cent below the record. Here's why: In March, factory workers took home the fattest pay envelopes in history while the cost-of-living index remained steady at 123.7 (1947-49 = 100). The average factory worker with three dependents had takehome pay of $79.68 in March—8 cents above the previous record set in December, 1958.

Will You Get Warehouse Aid if Steel Strike Comes?

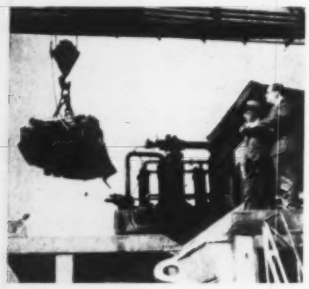
You'll probably run into a steel shortage in event of a midyear strike if your inventories won't carry you through and you're not a regular warehouse customer (Page 39). Warehouse operators say they won't deplete their stock at the expense of service to their normal trade; some attractive orders have been turned down already. But service center people say they'll be able to supply most of the needs of their regular customers. Inventories seem adequate in plates, structurals, hot and cold finished bars, tool steel, mechanical and pressure tubing, stainless and alloy products.

Barlow Moves Toward Tax Reform

President Eisenhower should appoint a nonpartisan Federal Tax Commission (representatives of business, labor, the professions, Congress, and the Treasury Department), asserts Joel Barlow, taxation committee chairman, U. S. Chamber of Commerce. The group would take the nation's tax problems

to the public to drum up support for lower income taxes (especially in higher brackets), better depreciation rates, and the need for a nondiscriminatory excise tax. Mr. Barlow is expected to meet with tax experts this month to work out details of his approach.

Scrapmen Caught in Profit Squeeze



Pinched between rising labor costs and weakening demand, scrap dealers are turning to advanced yard mechanization for relief. A survey of 208 dealers across the nation (Page 42) discloses a trend toward semiautomatic equipment and a new feeling among the dealers that they are not just a service industry but that they manufacture a product. So they're re-evaluating their outlook and modernizing operating policies.

Blough Blasts 'Price Notification' Bill

Sen. Joseph O'Mahoney's (D., Wyo.) "Price Notification" bill would control industrial prices by administrative whim and by supplanting the natural forces of competition, charges Roger M. Blough, chairman, U. S. Steel Corp. Rather than applying to only a few basic industries, the bill would affect more than half of all manufacturing industries—including such "basic" industries as cured fish, garters, sausage casings, and unfinished pickles, says Mr. Blough. He asserts that more than 155,000 companies would be affected.

. . . And Predicts Steel Production

There's "a very long chance" that the steel industry can surpass its 117-million-ton production record (set in 1955) this year, asserts Mr. Blough. Second quarter operations should range between 90 and 95 per cent of capacity, he believes. The third quarter will show a dip but should be better than was earlier expected (barring a prolonged strike); the fourth quarter will be better than the third, he predicts.

You Can Harden Parts with . . .

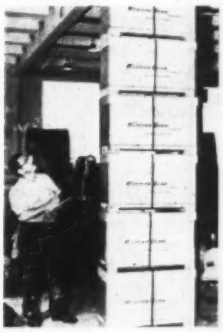
Hardening parts is the latest development in explosives technology. You can cold work many hardenable parts, including stainless steel. The method requires care, but is easy to use (Page 84).

Economic Barometers Signal Sunny Days

1. The fabricated structural steel industry rebounded in March by recording the first shipment upturn in the last six months. American Institute

of Steel Construction says March shipments totaled 260,490 tons—the highest this year and 21 per cent better than in February. 2. Makers of automatic gas water heaters set a sales record in the first quarter by shipping 775,900 units—up 15.2 per cent from the year-ago mark, reports Gas Appliance Manufacturers Association. 3. March net new orders for machine tools totaled $40 million—the highest since August, 1957, reports the National Machine Tool Builders' Association. 4. Sales of TV sets in March climbed above year-earlier levels for the first time this year; makers say the pickup is continuing.

Corrugated Boxes Trim Shipping Expenses

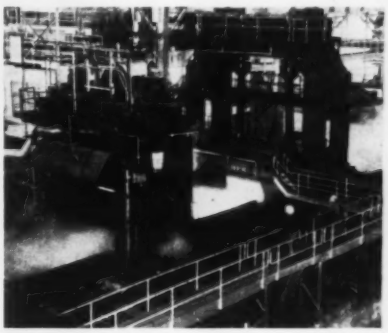


You may be able to cut the cost of shipping heavy loads by using corrugated boxes. Savings of 50 per cent or more are common. And corrugated boxes have good stackability (see picture). Western Gear Corp., Belmont, Calif., stacks packaged gear motors (weighing up to 400 lb each) six high without damage (vs. three or four high with its former method). You can get specially designed containers allowing you to pack several parts in a single carton. Or packages can be designed to facilitate feeding parts into a production line (Page 86).

Galvanized Sheet Market To Zoom

The nation will need 4.3 million tons of galvanized sheets in 1962 and 4.7 million by 1967 (vs. shipments of 2.8 million tons last year), predicts Leslie Irvine, assistant vice president of sales, Wheeling Steel Corp. Shipments have climbed 72 per cent in the last decade. They rose 18 per cent in 1958 (vs. '57), to account for 4.7 per cent of all steel shipments (vs. 2.5 per cent in 1948).

Lukens Completes Expansion



The nation's third largest producer of steel plates, Lukens Steel Co., Coatesville, Pa., has completed a $33.6 million expansion program—largest in its 149 year history. A new electric furnace, producing 180,000 ingot tons annually, boosts the firm's steel output 24 per cent. (Page 46).

Renegotiation Refuses to Die

It looks like industry will have to live with renegotiation for at least another 27 months. Rep. Carl Vinson (D., Ga.), chairman of the House Armed Services Committee, is demanding the law (restricting profits on government

work to 12 per cent) be made permanent—and he has substantial backing on Capitol Hill.

Railroads Fight Featherbedding, Lower Rates, Order Cars

Three developments in the railroad industry: 1. "Make-work, pay for work not done, and penalties involving antiquated work rules" cost American railroads more than $500 million a year in wages, asserts Perry M. Shoemaker, president, Delaware, Lackawanna & Western Railroad. 2. To fight competition from the St. Lawrence Seaway, about 50 eastern railroads have proposed 10 to 25 per cent rate reductions on some commodities moving between North Atlantic ports and ports on Lake Erie and Lake Michigan. 3. Freight cars on order Apr. 1 totaled 35,387 vs. 28,789 a month earlier and 38,027 a year earlier.

Curb Indirect Labor Costs

Industry is alarmed at the cost of indirect labor. It has mounted so rapidly that it has caused total labor costs to rise three times as fast as the cost of production labor alone. Problem: Nonroutine jobs are harder to measure and control than repetitive production line jobs. And most managements lack adequate standards to measure indirect work. But most of the methods used in setting standards for direct work can be adapted to indirect work measurement—with good results (Page 44).

Construction Contracts Mount; Costs to Climb

Construction contracts awarded in March totaled $3.3 billion—23 per cent above March, 1958—to set a new high for the month. February awards totaled $2.3 billion . . . Building costs will climb 4 per cent by April, 1960, predicts an F. W. Dodge Corp. official . . . Interest rates on loans for business and industrial properties are rising, reports the National Association of Real Estate Boards.

Here's a Way to Lower Absenteeism

Training your employees in off-the-job safety may be well worth your while. Accidents occur 5 to 20 times more frequently off the job than on, concludes a survey of 84 firms employing nearly 350,000. The two main hazards: Auto accidents and slips and falls.

Straws in the Wind

United Steelworkers Local 4684 abandoned its efforts to elect David J. McDonald to the board of directors of Crane Co. after the Securities & Exchange Commission directed that there be no further solicitation of proxies . . . Federated Department Stores Inc., Cincinnati-based chain, is seriously considering selling an American-made compact car . . . Cleveland Electric Illuminating Co. is planning a $40 million expansion and modernization of its Lake Shore powerplant.

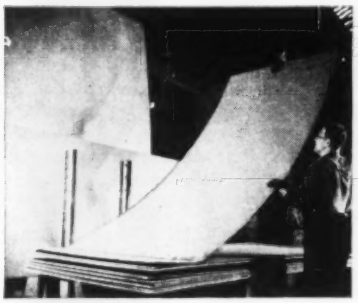
STAINLESS DIRECTORY

Buyers Guide to Ryerson Stainless Stocks & Services

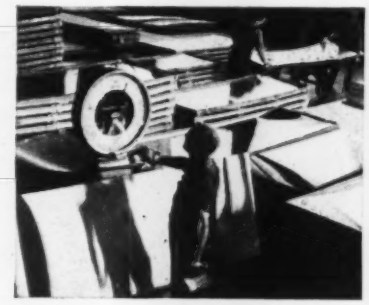
Here's a quick guide to the nation's largest stocks of stainless steel—2,351 sizes, shapes, types and finishes of stainless in stock at Ryerson.

This wide selection assures you of getting the best stainless for every application. Extra care in storage, handling and shipping—such as padded shear clamps to protect finish and flatness of sheets, guards the high quality of Ryerson stainless stocks. And in addition, the help of full-time stainless specialists is yours when you call Ryerson.

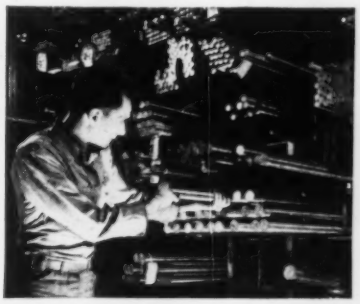
See your Ryerson catalog for a complete listing of stocks and call your nearby Ryerson plant for quick shipment of stainless—any type or size—one piece or a truckload.



PLATES—Available in 9 analyses including plates to Atomic Energy Commission requirements and to ASTM specifications for code work. Also low carbon types for easy welding.



SHEETS—11 analyses of Allegheny stainless sheets in stock including nickel and straight chrome types. Also extra wide sheets to reduce welding costs, expanded and perforated sheets.



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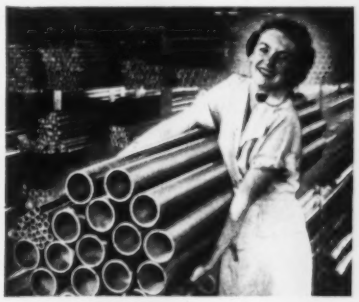
HEADS—A.S.M.E. flanged and dished heads in types 304, 304L, 316 and 316L are on hand in large quantities, and in a wide range of gauges and sizes.



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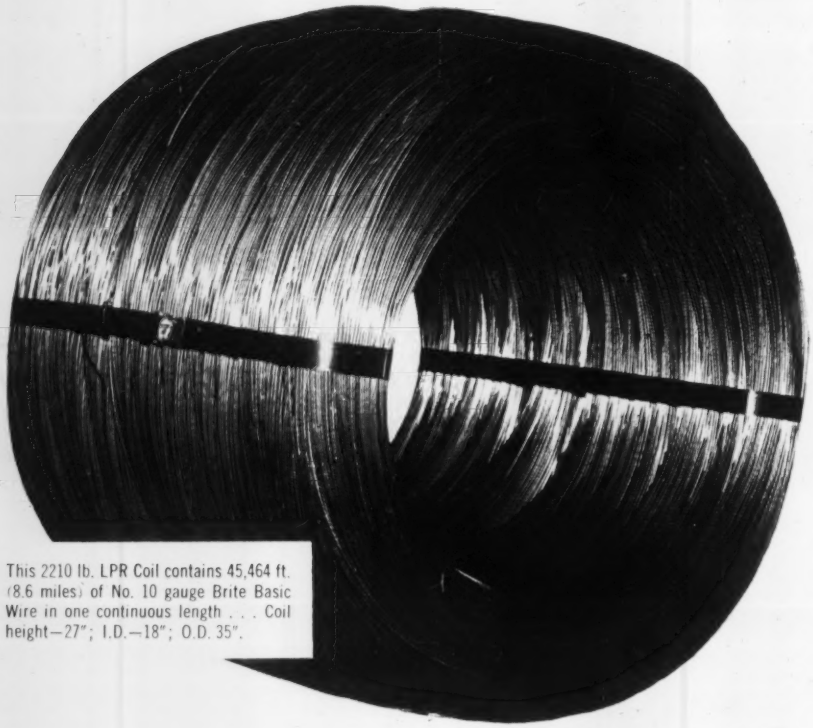

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Massachusetts on the Rocks!

"The popular drink in Massachusetts will be Massachusetts-on-the-rocks—that is, unless business, labor, and government get together to create a better climate for business, and thus more jobs."

That provocative statement was made by Robert G. Welch, executive vice president of the American Steel Warehouse Association. It keynoted a panel presentation before industrial leaders at Boston which was sponsored by ASWA's New England chapter.

The chapter is concerned because many old firms have moved away or have gone out of business, and the area is not attracting new businesses in sufficient volume.

Industrial growth in New England (including Massachusetts) during the 1947-57 period was only half the national average and as little as one-third that of areas like the Southeast, Southwest, and West.

Massachusetts (with 28 of New England's 33 steel service centers) reputedly has a poor business climate because of the high cost of unemployment and workmen's compensation, an ever mounting bill for public services, high state and local taxes, and an excessively high debt.

In seeking solutions for the state's problems, the panelists—Robert G. Hennemuth, Raytheon Co.; Norman MacDonald, Massachusetts Association of Taxpayers; and State Senator Maurice A. Donahue (D.)—were asked to pull no punches.

They cited these facts:

Management people decry what's going on in Massachusetts but are unwilling to help solve the myriad problems confronting it.

They play partisan politics rather than work objectively with both parties.

Labor presents issues that are out in the open.

Employer organizations present issues that are beclouded.

Legislators know the people who work in plants but not the people who run them.

If you approach problems from a partisan point of view and you pick losers, you deserve what happens to you.

There is a crying need for businessmen to get into government but not into politics.

Those facts are perfectly obvious to all businessmen but generally overlooked.

The New England chapter's campaign to bust business roadblocks is one we think should not be limited to Massachusetts!

Irwin H. Such
EDITOR-IN-CHIEF

Clevelands power huge USS heat treat furnace

Handling plates as big as 45 ft. long, 13 ft. wide and 2 in. thick, the approach and delivery tables on this new Drever heat treat furnace require dependable power transmission. That's why Cleveland Worm Gear speed reducers were selected for this job in U. S. Steel's 160-inch plate mill.

Behind that dependability stands Cleveland's 46 years of design engineering coupled with workmanship of the highest quality.

In steel mills, mines, fabricators . . . anywhere rugged, compact and dependable speed reducers are needed, you'll find Clevelands handling the toughest assignments. To see how Clevelands can handle your most demanding power transmission jobs, ask for Bulletin 145. Write The Cleveland Worm & Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

CLEVELAND
Worm Gear
Speed Reducers

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

Steelmen Try to Clamp Lid On Wage–Price Spiral

	Increased Hourly Employment Costs	Average Base Price Increase[1]	Price Increase per penny of Increased Employment Costs
1949	$0.074	$4.00	$0.540
1950	0.155	5.50	0.355
1951	0.206	[2]	—
1952	0.201	5.20	0.259
1953	0.125	4.00	0.320
1954	0.072	3.00	0.417
1955	0.210	7.35	0.350
1956	0.232	8.50	0.366
1957	0.262	6.00	0.229
1958	0.297	4.50	0.152
	$1.834	$48.05	$0.332 (Average)

[1]Includes only increases announced immediately after new wage contracts.
[2]Korean War price controls and court-contested steel strike delayed price action until 1952.

Odds favor the steelworkers getting a 6 to 11 cents an hour package. With passalong costs, here's what that means: A 6 cent raise would boost steelmaking costs $2.16 a ton; an 8 cent hike, $2.88; an 11 cent increase, $3.96.

CONSTANTLY increasing costs of employment in the steel industry are being met by progressively smaller price hikes.

The trend will probably continue because:

1. Steelmakers fear the loss of business here and abroad to foreign competitors (whose employment costs are 60 to 85 per cent lower than theirs).

2. Government leaders, from President Eisenhower to Sen. Estes Kefauver (D., Tenn.), have put them on the spot in the battle against inflation.

• **Hold that Line in '59**—As industry leaders begin contract talks May 5 in New York with David J. McDonald's big (1.25 million member) United Steelworkers union, they are more determined than ever to hold the line—first on wages, then on prices.

But Mr. McDonald probably won't walk away from the bargaining table empty handed. He squelched the dues rebels at the Atlantic City convention, but he didn't silence his detractors for all time. He has to produce. Chances are he'll get 6 to 11 cents per hour per man per year. If he does, what will the companies do? In view of government opposition, inroads of foreign steel, competition from other materials, and the uncertain outlook for the fourth quarter, they'll give serious consideration to not raising prices.

• **Price Formula**—If costs go up 6 cents an hour, steelmaking costs will jump about $1.08 a ton (18 manhours). An increase of $2.16 will be warranted because costs of purchased goods and services usually increase as much as direct labor. Similarly, an 8 cent wage hike means $2.88 a ton, and an 11 cent boost means $3.96.

If the industry decides price relief is mandatory, don't be surprised if an increase comes in two installments—one right after the contract is signed (enough to offset higher direct labor costs) and another about six months later (to cover passalong costs) if the economic coast is clear.

• **Profits Under Fire**—During contract talks, much will be said about the industry's first quarter profits. Several producers (see Page 40) have reported record sales and earnings. Mr. McDonald thinks his adversaries are vulnerable because

of their "embarrassing riches." He'll argue they can hike wages and benefits without raising prices.

• **Wages and Prices**—Anticipating the USW claim, Inland Steel's chairman, Joseph L. Block, told the New York Society of Security Analysts that wages and prices are inseparable. "Increased production costs without compensating price increases could only result in lower profit," he declared. "Specialists in steel stock know that the industry can ill afford a reduction in its profit margins. Its record over the years compared with industry in general is none too good."

Last year's rank: 27th among 41 leading manufacturing industries in return on net assets (8.2 per cent). Average for the group was 9.8 per cent.

• **Need for Profits**—You can't rob profits to pay wages, says Robert C. Tyson, chairman of U. S. Steel Corp.'s finance committee. Reasons: 1. Without the prospect of profit, no one would invest his savings to provide the tools of production. 2. Profits aren't stagnant pools of money; they're earnings that have already been spent—in dividends, new facilities, and inventories, to finance sales, or to supply needed working capital. 3. Profits are needed to make good the depreciation deficiency that arises during inflation. Case in point: An open hearth plant cost $10 million in 1930. Today's replacement costs $64 million, but the government permits steelmakers to recover only the original cost.

When steelmakers announced a price hike averaging $6 a ton on July 1, 1957, Senator Kefauver's subcommittee charged: 1. That the increase was at least twice as large as necessary to cover a simultaneous wage boost. 2. That the entire cost was offset by a decline in the price of scrap. Had the statements been true, profits would have jumped. Instead, industry earnings in the following 12 months dropped $288 million, and profit margins fell from 7.2 per cent to 6.2 per cent. Had the companies raised prices enough to cover their increased costs and maintain their profit rate, a $10 a ton increase, instead of $6, would have been required.

"Cost increases in the steel industry couldn't be paid out of profits even if it were feasible to eliminate them," says the American Iron & Steel Institute. Example:

"If the steel companies had continued to charge 1946 prices and had absorbed the increased costs between then and 1957, assuming their expenditures for goods and services would have been the same as they actually were, they would have rolled up a loss of $35 billion."

• **Labor's Share Increases** — Employment costs take a big bite out of every sales dollar, and the size of the bite is increasing. Last year, 38.7 cents went to labor (vs. 35.8 cents in 1957 and 34.2 in 1956). About 42 cents was spent for materials and services, in which the employment costs of suppliers figure prominently. Indeed, the cost of labor accounts for more than 75 per cent of the cost of all bills paid.

Higher Wages Mean Higher Prices But Bargaining Slows the Spiral

Year	USW Demands in Cents per Hour	Increased Hourly Employment Costs (due to settlement)	Reduction from Demand	Average Base Price Increase[1]	Price Increase per Penny of Increased Employment Costs	Price Increase Required by USW Demands	Amount of Price Increase Averted
1949	$0.30	$0.074	$0.226	$4.00	$0.540	$16.20	$12.20
1950	0.25	0.155	0.095	5.50	0.355	8.88	3.38
1951	——	0.206	——	[2]	——	——	——
1952	0.265	0.201	0.064	5.20	0.259	6.86	1.66
1953	0.22	0.125	0.095	4.00	0.320	7.04	3.04
1954	0.50	0.072	0.428	3.00	0.417	20.85	17.85
1955	0.20	0.210	—0.01	7.35	0.350	7.00	—0.35
1956	0.30	0.232	0.068	8.50	0.366	10.98	2.48
1957	0.30	0.262	0.038	6.00	0.229	6.87	0.87
1958	0.30	0.297	0.003	4.50	0.152	4.56	0.06
	2.635	1.834	1.007	48.05	0.332 (Average)	89.24	41.19

[1]Includes only increases announced immediately after new wage contracts.
[2]Korean War price controls and court-contested steel strike delayed price action until 1952.
Sources: Wage information from American Iron & Steel Institute, annual averages per man per hour.
Price increases estimated by STEEL.

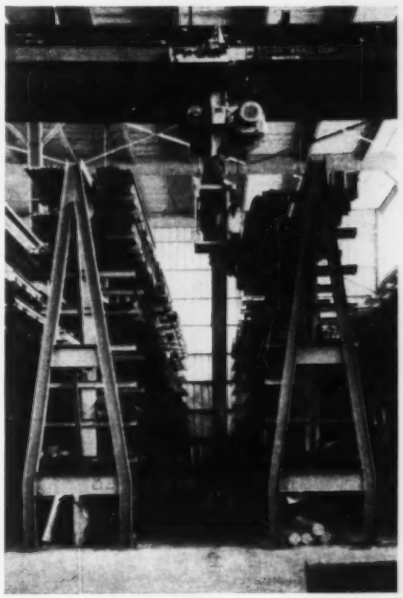
Distributors Foresee Ample Stocks

Most can serve regular customers even if strike comes. They expect total to build up by end of June to about 3.7 million tons, amount on hand at start of last year

(Net tons)

Products	Beginning of 1959	Beginning of 1958
Plates, shapes, bars*	1,709,000	2,037,000
Sheets & strip**	800,000	800,000
Galvanized sheets	400,000	400,000
Tubular products	150,000	160,000
Alloys	150,000	160,000
Stainless	100,000	110,000
Miscellaneous	40,000	35,000
Totals	3,349,000	3,702,000

*Includes hot rolled and cold finished bars.
**Includes hot rolled and cold rolled.



A. C. Leslie Co.

REGULAR customers of steel service centers will be able to get most of their needs covered even if there is a midyear steel strike. That's the consensus of delegates at the 50th convention of the American Steel Warehouse Association at Chicago, May 3-6.

Inventories of these items are adequate: Plates, structurals, hot and cold finished bars, tool steel, mechanical and pressure tubing, stainless and alloy products.

But other than regular customers may be out of luck if a strike is accompanied by shortages. Reason: Warehouse suppliers will not deplete their stocks at the expense of service to their normal trade (some attractive mill-size orders have been turned away). Also, a steel strike may close some steel service centers.

• Service centers have a tough time building comfortable stocks.

Their stocks of industrial steel (excluding merchant trade items) amounted to only 3,349,000 net tons at 1959's start, down 350,000 tons (10 per cent) from the 3,702,000 tons held at the beginning of 1958.

Current ASWA data indicate inventories should be back to around 3.7 million tons by the end of June. But the distributors won't have an easy time hitting their midyear target because of heavier demand from customers and increasing difficulty in replenishing stocks as mill shipments get delayed.

First quarter business was 25 per cent better than that in the like 1958 period. The uptrend continues. Look for second quarter volume to top that of the first three months by 10 to 15 per cent.

• Intake from mills will have to be stepped up substantially over that in 1958.

Last year, warehouse steel availability (stocks of 3.7 million tons, plus intake of 6,076,395 tons) was 9,776,395 net tons. Since distributors' stocks totaled 3,349,000 tons at the end of that year, the service centers shipped 6,427,395 net tons to customers in 1958, a monthly average of 535,616 tons.

Assuming a conservative 10 per cent increase in warehouse business, first half shipments to consumers should total 3.5 million tons, 151,000 more than were held in stock at the start of the year. So monthly warehouse intake must average 641,833 tons in the first six months if stocks are to total 3.7 million tons at midyear. That's an increase of 135,467 tons monthly, about 27 per cent, over average monthly intake of 506,366 tons in 1958.

• Concern over the rising flood of imports is increasing. The movement is spreading to Great Lakes areas.

Despite the difficulties faced, steel service center operators are confident they will solve their inventory problem. But they're increasingly concerned over the threatened deluge of foreign steel.

Last year, imports accounted for 18 per cent of total reinforcing bar tonnage available in the U. S. vs. 7 per cent in 1957. Pipe and tubing imports accounted for 3.2 per cent of supply vs. 1.9 per cent the year before. Competition from wire, nails, and similar merchant products has been particularly tough.

Coastal markets have been chiefly affected so far. However, with the opening of the St. Lawrence Seaway, midwestern distributors are apprehensive.

Some think their markets will be deluged with steel of all kinds from Western Europe and Japan. To get to the bottom of the problem, ASWA has set up a special committee to investigate the situation.

Metalworking's 1st Quarter Earnings Rise Sharply

(Net Profit)

SELECTED MANUFACTURERS	1959	1958
Air Reduction Co. Inc.	$3,748,969	$3,370,716
Allis-Chalmers Mfg. Co.	(a)3,623,466	2,307,199
Aluminum Co. of America	10,725,430	11,458,810
American Can Co.	7,838,649	7,056,773
American Machine & Foundry Co.	5,020,000	2,766,000
American Motors Corp.	12,463,993	2,380,895
Babcock & Wilcox Co.	4,479,000	2,000,000
Beryllium Corp.	350,399	35,454
Bliss & Laughlin Inc.	772,051	227,265
Bohn Aluminum & Brass Corp.	408,984	52,617
Buffalo Forge Co.	195,296	312,780
Burroughs Corp.	1,533,408	1,100,414
Caterpillar Tractor Co.	10,981,023	3,566,954
Carborundum Co.	1,774,099	452,271
Chance Vought Aircraft Inc.	1,506,023	2,312,451
Checker Motors Corp.	65,700	(a)17,260
Cleveland-Cliffs Iron Co.	857,725	714,895
Crane Co.	739,000	338,000
Eaton Mfg. Co.	4,300,948	2,390,536
Ekco Products Co.	918,212	734,308
Electric Auto-Lite Co.	1,968,583	644,787
Fairbanks, Morse & Co.	120,187	21,837
Ferro Corp.	785,000	370,000
Ford Motor Co.	134,800,000	20,800,000
Fruehauf Trailer Co.	2,346,919	(a)181,216
General Electric Co.	52,778,000	49,184,000
General Steel Castings Corp.	442,595	760,871
IBM Corp.	28,964,684	23,396,118
Kennecott Copper Corp.	22,396,392	11,651,594
Mack Trucks Inc.	3,539,959	1,138,509
Maytag Co.	3,255,746	1,812,341
Metal & Thermit Corp.	216,618	174,659
Minneapolis-Honeywell Regulator Co.	5,946,784	4,277,927
Monarch Machine Tool Co.	35,301	83,107
National Acme Co.	339,702	278,286
National Cash Register Co.	3,670,111	3,661,816
National Lead Co.	11,745,684	9,427,116
North American Aviation Inc.	7,339,000	6,419,000
Otis Elevator Co.	4,022,861	3,322,214
Pittsburgh Screw & Bolt Corp.	236,906	84,542
Porter (H. K.) Company Inc.	1,701,924	592,025
Raytheon Mfg. Co.	2,293,000	1,734,000
Reynolds Metals Co.	9,001,357	9,910,345
Robertshaw-Fulton Controls Co.	1,436,743	674,432
Signode Steel Strapping Co.	1,085,162	609,363
Studebaker-Packard Corp.	7,754,991	(a)6,294,480
Tappan Co.	740,251	313,375
Texas Instruments Inc.	2,400,000	1,109,000
Thew Shovel Co.	(a)56,000	(a)155,000
Underwood Corp.	7,280	(a)1,986,013
Union Carbide Corp.	41,581,459	22,832,616
U. S. Pipe & Foundry Co.	1,278,112	794,357
Vertol Aircraft Corp.	179,890	162,635
Westinghouse Air Brake Co.	1,985,814	2,301,276
Westinghouse Electric Corp.	14,409,000	12,903,000
Worthington Corp.	1,767,966	2,108,840

(a) Net loss.

Steelmakers Swing Up, Too

SELECTED COMPANIES	1959	1958
Acme Steel Co.	$1,849,305	$439,827
Alan Wood Steel Co.	955,000	33,000
Allegheny Ludlum Steel Corp.	4,549,542	725,900
Armco Steel Corp.	21,150,000	9,171,693
Barium Steel Corp.	114,218	(a)422,700
Carpenter Steel Co.	1,404,335	604,838
Colorado Fuel & Iron Corp.	4,604,840	(a)1,390,096
Continental Steel Corp.	1,081,030	580,839
Crucible Steel Co. of America	3,511,206	172,395
Detroit Steel Corp.	2,568,313	(a)303,678
Eastern Stainless Steel Corp.	679,219	249,001
Granite City Steel Co.	3,468,763	2,055,182
Inland Steel Co.	17,859,090	7,961,147
Jones & Laughlin Steel Corp.	15,738,000	1,657,000
Kaiser Steel Corp.	3,302,687	2,049,426
Lone Star Steel Co.	2,021,876	482,638
Lukens Steel Co.	1,008,394	1,470,230
McLouth Steel Corp.	4,663,352	454,037
National Steel Corp.	16,504,090	3,801,426
Pittsburgh Steel Co.	1,370,615	(a)968,881
Republic Steel Corp.	26,844,585	8,583,506
Sharon Steel Corp.	590,853	(a)283,213
U. S. Steel Corp.	106,585,303	62,426,679
Wheeling Steel Co.	4,471,000	505,000
Youngstown Sheet & Tube Co.	11,541,864	3,576,100

(a) Net loss.

Metalworking Shoots for Record Profits

METALWORKING has its sights set on record profits in the second quarter. It'll hit the target if: 1. The capital goods industries catch up with the recovery pace of the general economy. 2. Other metalworking industries continue their present rate of improvement.

But the threat of a steel strike and a resulting price increase in the third quarter cloud the sunny outlook. The situation signals a new kind of profit pinch: As rising sales volumes ease the pressure on one side, spiraling wage costs heighten it on the other.

A wage hike and price increase in the steel industry originates a snowball that gathers more wage boosts and price jumps as it rolls through the manufacturing industries to the producers of finished products.

The result: While second quarter profits will be high, the trend may reverse after midyear.

• The steel industry is almost certain to chalk up record second quarter earnings.

Several steelmakers set records last quarter. (Among them: Kaiser Steel Corp., Inland Steel Co., National Steel Corp., Jones & Laughlin Steel Corp.) Others came close: Armco Steel Corp. more than doubled its year-ago profit performance. Allegheny Ludlum Steel Corp. earned $4.5 million—six times the year-ago figure.

• A record quarter will result partly from artificial demand.

Customers are building inventories in anticipation of a steel strike. So even without a strike, steelmakers expect a third quarter dip due to inventory liquidation.

• Racing demand isn't the only reason for steel's big profits.

Cost reduction programs are partially responsible. Pittsburgh Steel Co.'s president, Allison R. Maxwell Jr., says his firm probably could have averted its 1958 loss ($866,000) if its cost reduction program had been completed before the operating rate began to decline.

More efficient equipment is aiding profit margins too. Granite City Steel Co. says improved facilities helped it boost earnings to 9.2 per cent of sales last quarter. Operating at near capacity also widens profit margins.

• The auto industry, with one big quarter under its belt, is looking forward to record earnings.

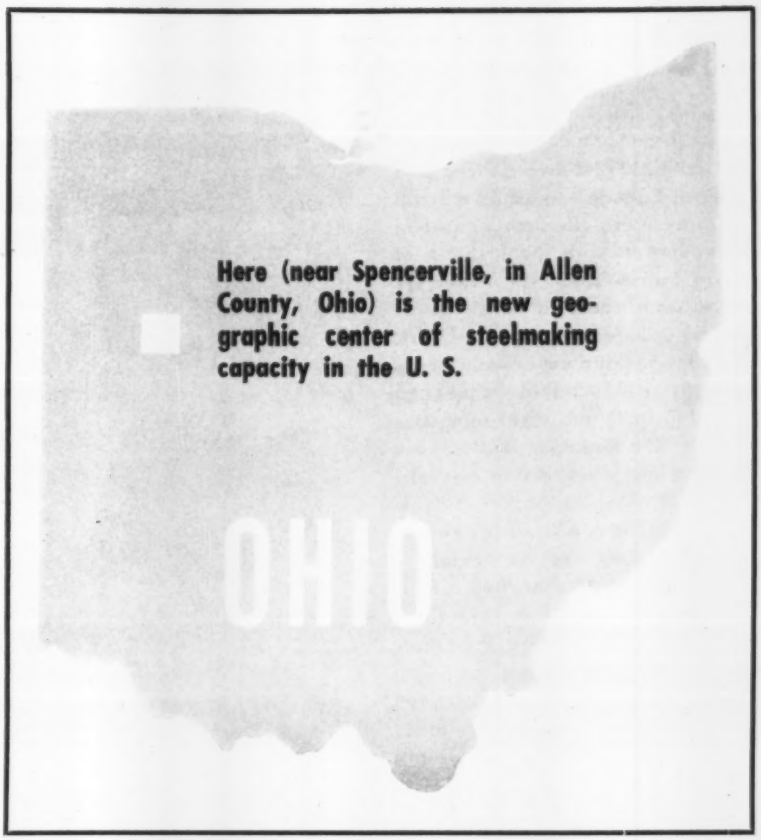
Ford Motor Co.'s $134.8 million net profit last quarter came within $2 million of its quarterly record set in 1955's second period. It beat the previous first quarter record by 22 per cent.

• The home appliance industry, riding on increased consumer spending and record construction outlays, expects second quarter profits to top those of the first period.

General Electric Co.'s first quarter net profit rose 7 per cent above the '58 first period mark.

• The capital goods industries are noticing an earnings uptrend, but they'll have far from record profits this quarter.

Some companies in this field look for 10 to 20 per cent gains vs. the first quarter; many hope to match their year-ago showings; few expect to match 1957 levels.



Here (near Spencerville, in Allen County, Ohio) is the new geographic center of steelmaking capacity in the U. S.

Steel 'Center' Moves West

THE STEEL industry's westward march continues.

The geographic center of steelmaking capacity in the U. S. has moved some 20 miles to the west in the last two years and is now near Spencerville, in Allen County, Ohio. When last computed in 1957, it was at Westminster, Ohio, in the same county.

• No Steel Plant — Spencerville (1800 population) has no steelmaking plant within 45 miles. The nation's steel capacity is evenly distributed around it by the "tons-times-miles" method of calculation. The westward shift is largely attributable to a 27 per cent gain in capacity for plants west of Chicago, against a national capacity increase of about 11 per cent during the same period.

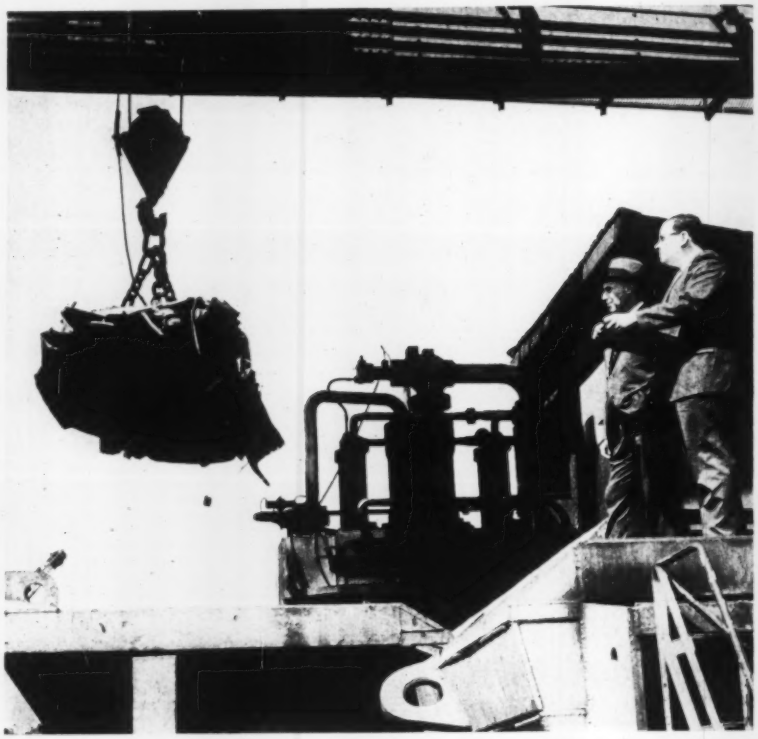
Thus far, the addition of Alaska as a state, and the prospective admission of Hawaii, can have no effect on the geographic center because no steel plants operate in either location.

• The Effect of Hawaii—An electric furnace plant is reportedly under construction in Hawaii. Because a distance of more than 4200 miles from Spencerville is involved, the planned 30,000 tons of annual capacity would be insufficient to cause the geographic center to move appreciably. In fact, a hypothetical Hawaiian steel plant with a capacity of 1.5 million tons would move the center only about 50 miles southwesterly.

A hypothetical plant of the same capacity in Fairbanks, Alaska, would move the center a little more than 35 miles northwesterly, although a distance of roughly 3000 miles separates Fairbanks from the present center.

How Scrapmen Fight the Squeeze

EDITOR'S NOTE: Edward Richard of Antioch College conducted a scrap mechanization research project in co-operation with the Institute of Scrap Iron & Steel. He visited 31 cities from coast to coast, questioned 208 ferrous scrap dealers. His mission: Find out how the scrap industry will meet the challenge of rising costs and weakening demand. His findings: Dealers are moving into a new era of mechanization. His conclusion: Scrap dealers are tending toward a philosophy that they are not merely a service industry—that they manufacture a product. In this light, they are re-evaluating their outlook, modernizing their operating policies. Co-operation between dealers and buyers is essential to the success of the program. Here's Mr. Richard's report . . .



Edward Richard (right) interviews Ralph Kopelove, president, Kopelove Iron & Metal Co., Dayton, Ohio, and national secretary, Institute of Scrap Iron & Steel. In the background: A 65 in. Ohio magnet and a Harris baler

CAUGHT between rising labor costs and weakening demand, scrap dealers are moving into a new stage of mechanization.

• For the scrap industry, it means a new profit opportunity—a chance to meet the challenge of rising labor costs.

• For equipment makers, it means an expanding market.

Nine in 20 ferrous scrap dealers improved mechanization in their yards last year; 6.3 per cent spent more than $1 million each, on the average, for new facilities. The trend is strengthening. Reason: Mechanization seems to be the only answer to the industry's profit pinch.

• For scrap buyers, it may mean fewer sources.

Industry leaders anticipate fewer, but bigger and more efficient yards.

• Demand for scrap is not keeping pace with the steel industry's operating rate.

Scrap prices have declined under conditions that would normally cause them to rise (see STEEL, Apr. 20, p. 117). Main reasons:

1. Steel mills are using more hot metal (blast furnace iron) in steel furnace melts. Hot metal always presents stiff competition to scrap when the industry's operating rate is low. But today's expanded blast furnace capacity permits hot metal to compete even with steelmaking operations crowding capacity.

Blast furnace capacity has jumped 40.5 per cent since 1946 and the uptrend is continuing. Current capacity: 94.6 million net tons.

2. Mills are using more home and direct shipment scrap. Home scrap is generated by the mills themselves. Direct shipment scrap comes to the mills under private contract, not through scrap dealers.

3. Steel mills are limiting their scrap buying in anticipation of a midyear strike. Mill inventories are relatively high and the steelmakers want them as low as possible if they have to close down in July.

• Result: Scrap prices have plummeted.

STEEL's composite on the No. 1 heavy melting grade stands at $34.33—down $15.30 from March, 1957—the last time the industry operated as close to capacity as it is doing now.

• That puts scrap dealers in a profit pinch.

Their labor costs are climbing while their incomes are dwindling. An industry as important to the nation as this one must find an answer. Scrapmen can't afford to gather scrap from remote places (such as farms, abandoned rail spurs, sunken ships) at current

prices. And national security demands that the scrap industry remain strong. Scrap is a vital resource in a time of national emergency. How will the industry meet this challenge?

• Many dealers are taking a long stride toward a solution.

They're mechanizing their yards to cut labor costs and pave the way for high volume turnover. That way, they can operate profitably at relatively low prices—and compete more effectively with hot metal. But yard mechanization is expensive. One dealer says he spent $1 million for a guillotine shear and a big baling press.

Yet, most dealers are mechanizing their operations. Says one: "You either mechanize or get out of business; it's a must." Of the 208 dealers questioned, 179 improved material handling in the 1953-57 period. Of all the improvements from 1947 through 1957, nearly half took place in the last three years.

• But the industry is only on the threshold of a new era of mechanization.

Only 8 per cent of the dealers questioned have conveyor systems. Few have automatic shears—an item characterized by one dealer as the most important contribution of the last 20 years.

Sorting processes consume tremendous amounts of labor, but few dealers have even experimented with semiautomatic methods. Many yards need new cranes and more efficient presses.

• A number of dealers see 1959 as "a good year to modernize."

They reason that machinery and manpower are plentiful, that money will be easier to borrow now than in the '60s, that labor and equipment costs will spiral higher in the '60s.

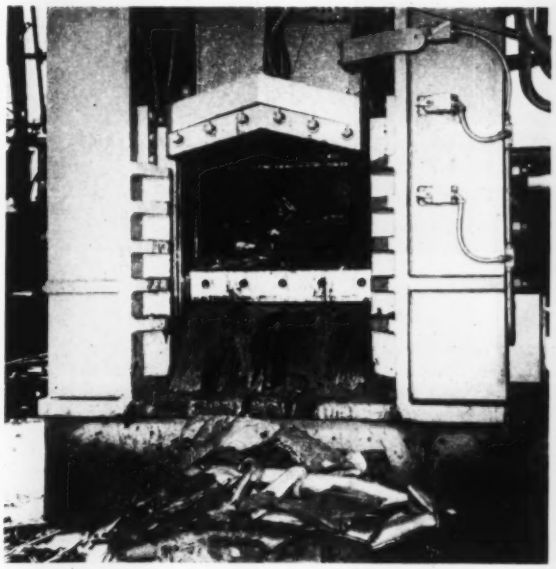
Suppliers of equipment (presses, shears, magnets, material handling devices) to the scrap industry say they are establishing intensive product research programs. More than 7 in 10 suppliers contend they are working closely with scrap dealers on product development. Only two manufacturers reported conducting any market research in the field. None admitted complete dependence on the scrap market. Reason: Unpredictable fluctuation in buying, caused by the speculative rise and fall of scrap prices.

• Nearly half the dealers feel equipment makers pay too little attention to their needs.

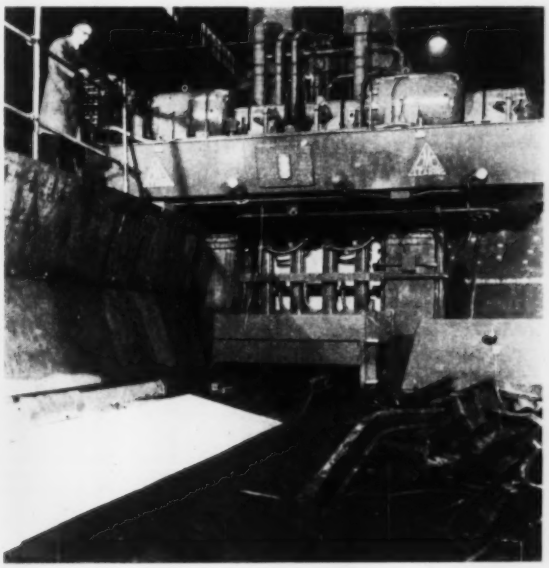
Here's what the dealers want from a supplier: 1. Fast, effective service, and spare part availability. 2. Honest specifications. 3. Simple, durable equipment. 4. Guarantees. 5. Ease of maintenance.

Operators of smaller yards want smaller automatic equipment than is found on today's market. And the dealers say there is a crying need for an improved method of torching or a replacement for the process. They also want a more nearly automatic sorting system, a smaller automatic shear, a process to clean motor blocks, and automatic machinery for breaking cast iron.

Here's Part of the New Look in Scrapyards

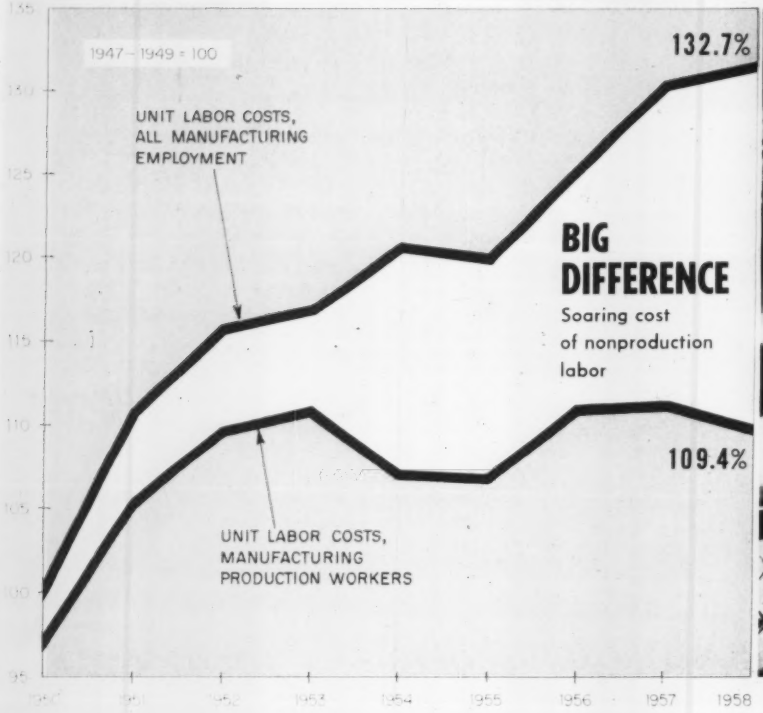


Front view of the Harris BS-350 baler-shear shows crosshead and clamp raised, and compressed scrap being moved into shearing position. The machine will shear 4 in. diameter rod or ¾ in. mild steel plate 36 in. wide



The feed box ram of the Clearing machine pushes a load of railroad scrap under the hold-down fingers and into the blade, while another load waits in the hopper to be given the same treatment

Indirect Labor: Key to Savings



Source: Federal Reserve Bank of Cleveland.

A WEST COAST aircraft manufacturer was worried about high labor costs in its drafting department. It hired a management consultant to make a work measurement study and set standards for the personnel in the department. Result: Annual savings of $1 million in wages alone.

Industry is becoming alarmed at the costs of its indirect labor. The graph above shows why. Because management knows so little about the actual costs and productivity of its nonproduction workers, it has allowed total labor costs to rise more than three times as fast as the cost of production workers alone. Nonroutine jobs (such as foremen, maintenance crews, material handlers, tool crib attendants, shippers, draftsmen, inspectors, clerical help) are much harder to measure and control than repetitive production line jobs.

• **But the growing importance of indirect labor in relation to production workers makes it imperative that management take another look at nonproduction work measurement and incentive programs.**

The big problem is a lack of adequate standards by which to measure the work of these people. One recent study showed that only one-third or less of responding metalworking plants attempt to apply work measurement or standards to indirect labor.

Many management consultants, like Robert Trundle, president of Trundle Consultants Inc., Cleveland, believe it is not only possible but also practical to measure indirect labor and apply incentives to it. But he cautions against going about it piecemeal. "Tackle it as a package deal," he advises. "And the first place to start is with your budgets. The easiest way to bring indirect labor costs under control is through flexible budgets to encourage departmental efficiency. Then study and analyze each job before setting out to measure it."

• **Most of the methods used in setting standards for direct work can be adapted to indirect work.**

Mr. Trundle feels that one of the least used—ratio-delay—is the most effective.

The first step is to analyze the job and make a list of all the things that the worker could be doing—such as performing the service assigned to him, walking, talking, getting a drink, or merely standing. Then, using a check sheet listing all workers to be observed, make periodic checks to find out what each man is doing with his time. After a sufficient number of checks, a pattern develops, showing how efficiently each man is working.

"In large plants where you work with many indirect laborers, the problem becomes one of cutting the force if the study shows fewer men could be doing the job," Mr. Trun-

dle points out. "Where you really run into trouble is in the one or two man operation. If the worker is spending only 75 per cent of his time doing his job, you can't hope to cut part of a man out. But don't try to combine productive and nonproductive jobs to make that man more efficient. Operations should be separated, not combined."

• Incentives can be applied to indirect workers whether you use direct measurement or relate them to production workers.

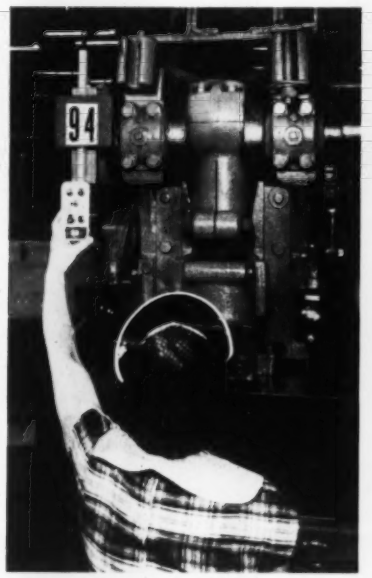
Among metalworking managers who extend incentive coverage to nonproduction personnel, you will find overwhelming approval of the idea. It seems to work out best where direct measurement of the nonproduction job is possible.

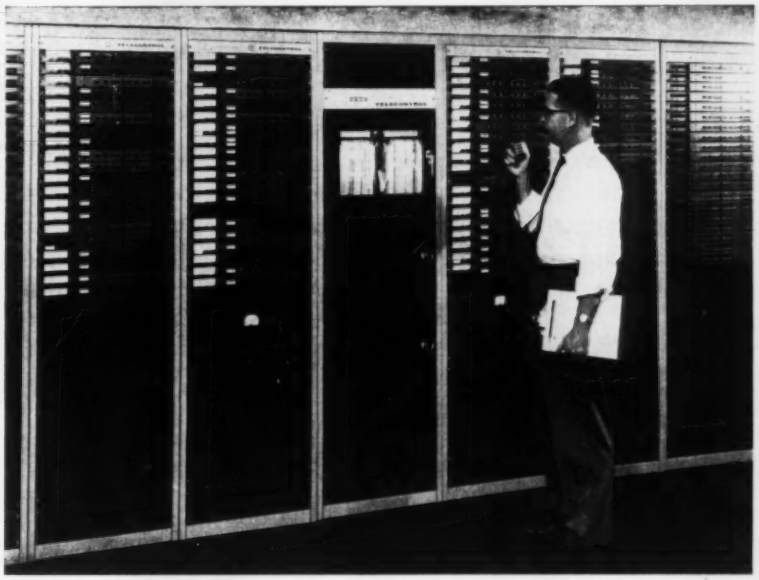
G. M. Campbell, vice president of Turton Associates Inc., Cleveland, and formerly with E. I. du Pont de Nemours & Co. Inc., says that in companies where indirect labor is a more important factor than direct labor—such as processing industries—it is worth millions of dollars to establish individual job standards. Otherwise, it's sometimes better to adopt "synthetic" standards for a group or department and extend the incentive goals over a period of a month or a quarter.

Such standards can be set up through any of the conventional work measurement methods. But if yours is a union shop, the standards must have the wholehearted approval of the union to succeed. "We set up synthetic standards for some jobs at Du Pont which have stood up a long time," he claims.

In setting up group incentives, it is sometimes a good idea to make it a variable factor plan, especially if you have a quality problem.

That way, incentive pay is based on such factors as quality, quantity, controllable maintenance and labor costs, safety, and materials used, as well as performance against the standard. Mr. Campbell feels that in such a plan, the group tends to police itself and raise the performance of below average workers.





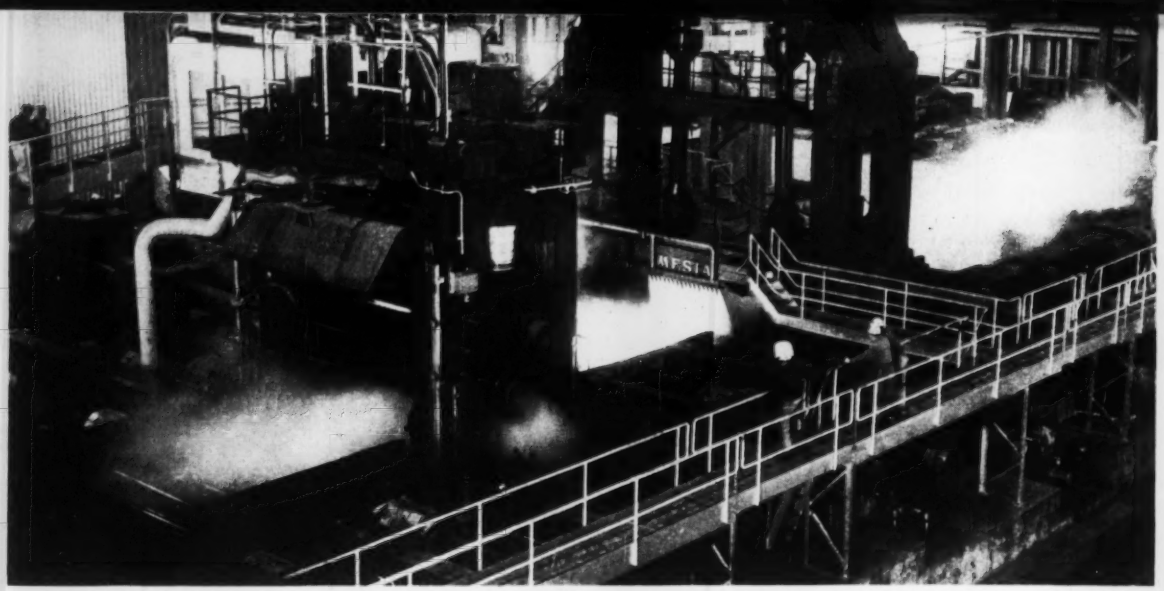
TWO MEN in a central dispatcher's office handle the entire production control operation at the Jackson, Mich., plant of Hancock Industries Inc. It used to require 16 nonproduction workers before the company installed a self-designed system, Telecontrol.

Each machine or production line is equipped with a control box (left) which is wired to a panel (right) in the controlroom. The panel contains counters for each machine to register automatically all production and downtime data for that particular operation.

When a machine is operating, a green light is on. When the operator requires a foreman, she flips a toggle switch which turns on a flashing red light at the machine and control panel and starts a buzzer in the dispatch office. The dispatcher calls the foreman over the public address system, and within seconds he is at the trouble spot. He can put the machine on downtime by inserting a key into the control box (downtime immediately starts registering on the counter in the control panel), or he can call the dispatcher over a telephone handset for additional help from material handlers, maintenance men, or others required to solve the problem. All payroll information is recorded by the dispatchers directly from the controlroom panel.

"The foreman no longer is walking around looking for work," say Hancock officials. "Nor is he doing unnecessary paperwork. He is now a full-time supervisor. Instead of nine foremen, we need only four. We have also been able to free four timekeepers, two checkers, two material handlers, two expediters, one maintenance man, and a payroll clerk for more productive work. Annual savings in indirect labor costs alone: $80,000."

Installation cost of the system is between $300 and $500 a machine, depending on what communications system is already in the plant.



Water at 1500 psi removes scale from ingots rolled in the 140 in. slabbing mill

Lukens Boosts Steel Plate Output

Largest expansion in company's 149 year history cost $33.6 million. Funds for the new electric steelmaking furnace, soaking pits, and automated slabbing mill were borrowed from customers. They furnished most of the mill equipment and got priority on future plate orders.

COMPLETION of the largest expansion program in its 149 year history makes Lukens Steel Co., Coatesville, Pa., the nation's third largest producer of steel plates.

The company spent $33.6 million to boost its steelmaking capacity 24 per cent, its plate rolling facilities 40 per cent.

• A new electric furnace, with a modern laboratory, increases ingot output.

Producing 100 tons of steel in each 6 hour heat, the furnace boosts annual production from 750,000 to 930,000 tons.

A direct reading spectrometer gives complete analysis of up to 12 elements in less than 8 minutes (including time to pour, cool, and prepare the specimen).

• Modern soaking pits set records for capacity and individual ingot dimensions.

Each of the 12 new pits heats 180 tons of ingots, 10½ ft high, to over 2300° F.

One way, horizontal firing, using oil or natural gas, reduced construction costs by placing all fuel facilities at one end of the pits. Combustion products are cooled from 1600 to 600° F in replaceable metallic heat exchanger units.

Pit covers are remotely controlled from the crane cab.

• Automated slabbing mill is said to be first in the U. S. with electronic rectifiers.

Power for reversing direct current drive motors on vertical and horizontal mills is derived from two, 80,000 kw rectifier systems. Claimed efficiency: 94 per cent.

The 140 in., 4 high, reversing mill makes a 4 in. reduction in a 61 ton ingot in one pass. But roll opening can be adjusted electronically in increments down to 0.01 in.

Ingots are rolled to size automatically, but the operator can override the electronic system at will.

• Expansion was financed with funds borrowed from customers.

The company realized in 1956 that it must expand to hold its own in the steel plate business. But financing wouldn't be easy; the company was unwilling to issue stock and couldn't raise the money through bond issues or loans from banks and insurance companies.

Management asked Lukens customers for loans totaling $39 million, in return for priorities on steel plate. Three agreed to furnish $20.5 million, to be returned over a 20 year period. Lukens borrowed $15 million from General Electric Co., $4 million from Allis-Chalmers Mfg. Co., and $1.5 million from S. Morgan Smith Co.

Benefit to lenders: Lukens bought as much of its new equipment as possible from GE and Allis-Chalmers.

• Organized growth should eventually boost the company's annual ingot capacity even higher than the present level.

The company expects to continue its expansion, alternately increasing ingot capacity and mill facilities.

A second electric furnace is being considered.

Lead and Zinc Markets Snap Back

• "Consumption of zinc this year will be about 960,000 tons vs. 821,000 tons in 1958—about a 17 per cent increase," estimates C. R. Ince (shown at right) vice president, St. Joseph Lead Co.

Other industry forecasts:

• Galvanized sheet shipments should climb to 4.3 million tons in 1962, a 1.4 million ton increase over 1958 shipments.

• Producers look for more use of zinc diecastings in '60 and '61 automobiles.

• The battery industry should ship about 346 million units this year, up about 39 million units from 1958.

LEAD AND ZINC—two metals that were hit harder by the recession than most—have weathered the storm and should make a substantial comeback this year and enjoy steady, if not spectacular, growth in the years ahead.

That was the consensus of producers attending the annual meeting of the Lead Industries Association and American Zinc Institute at Chicago. Producers of both metals admit they still have problems such as overproduction (see Page 140), none too stable prices, and sporadic demand. But they're encouraged by gains being made in research (see STEEL, Mar. 30, p. 39), and stepped-up promotion and marketing programs.

• **Shipments Better** — Simon D. Strauss, vice president-sales, American Smelting & Refining Co., reports first quarter U. S. zinc shipments ran about 35 per cent over those of the same period last year, while production climbed about 2 per cent. First quarter lead output was down 12 per cent from last year's; shipments were up 21 per cent.

Barring prolonged work stoppages at plants of zinc producers or consumers, U. S. zinc consumption should rise to 960,000 tons this year, compared with 821,000 tons in 1958—about a 17 per cent increase, predicts Charles R. Ince, vice president, St. Joseph Lead Co. (see photo). He believes producers' stocks will fall about 64,000 tons during the year.

One adverse possibility, says Mr. Ince, is that as quotas become effective without a corresponding curtailment abroad, the excess foreign production will come into the U. S. as manufactured articles, which have no quotas.

• **Galvanizing Climbs**—Shipments of galvanized sheets rose 18.2 per cent in 1958 to 2.9 million tons, to account for 4.7 per cent of all steel shipments. The market should climb to 4.3 million tons in 1962 and 4.7 million tons by 1967, predicts Leslie Irvine, assistant vice president-sales, Wheeling Steel Corp.

Hot-dip galvanizing is recovering well after postrecession lags. The American Hot-Dip Galvanizers Association says a recent production survey shows output of hot-dip galvanized products in 1957 and 1958 (including fabricated steel and castings) to be about 1 million tons annually.

Producers look for some gains in zinc diecastings in 1960 model autos and substantial growth in 1961 models. Some metalmen predict a stepup in use of galvanized steel in auto parts that come in close contact with the road.

• **Batteries Up**—Lead's biggest customer, the battery industry, should ship around 346 million units this year vs. 307,673,000 units in 1958, predicts Evans Taylor, Chicago branch manager for the Exide Industrial Div., Electric Storage Battery Co. His company sees a growing battery market in such electric-powered vehicles as lift trucks, golf carts, delivery trucks, and pleasure cars.

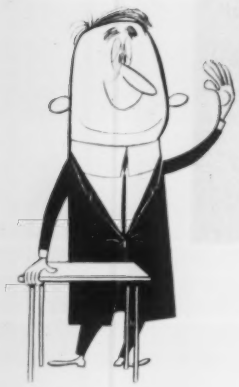
• **Potentials**—Scores of new uses for lead are cropping up. LIA Secretary-Treasurer R. L. Ziegfeld cites these examples:

• Twenty-five tons of lead slabs are controlling vibration in one of the country's new laboratories devoted to work on inertial guidance of missiles.

• The metal is being employed in new computing devices for its conducting properties.

• Some 500 tons of lead are going into the protective shielding around the reactor in the *N. S. Savannah*—the world's first atomic merchant ship.

The nuclear field has over 80 different applications for lead. The 100 reactors in the U. S. take 10 to 1000 tons of lead for shielding. Most significant today is the propulsion reactor field. At present, 33 submarines and three surface ships (either afloat or under construction) use nuclear power.



Know Your Senator!

THE ROLL CALL vote listed below is about your best guide to the power of organized labor in the U. S. Senate. It shows that, when the chips are down, 16 Democrats (all but three are Southerners) want stronger controls over unions. Two Republicans don't.

Here's how they voted on Senator McClellan's "bill of rights" for the laboring man:

Democrats for:

Byrd, Va.	Ervin	Lausche	Stennis
Chavez	Fulbright	McClellan	Talmadge
Dodd	Holland	Russell	Thurmond
Eastland	Jordan	Smathers	

Democrats against:

Anderson	Gruening	Kerr	Muskie
Bartlett	Hart	Long	Neuberger
Bible	Hartke	Magnuson	O'Mahoney
Byrd, W. Va.	Hayden	Mansfield	Pastore
Cannon	Hennings	McCarthy	Proxmire
Carroll	Hill	McGee	Randolph
Church	Jackson	McNamara	Sparkman
Clark	Johnson	Monroney	Symington
Ellender	Johnston	Morse	Williams, N. J.
Engle	Kefauver	Moss	Yarborough
Gore	Kennedy	Murray	Young, Ohio

Republicans for:

Aiken	Carlson	Goldwater	Prouty
Allott	Case, N. J.	Hickenlooper	Saltonstall
Beall	Case, S. D.	Hruska	Schoeppel
Bennett	Cooper	Keating	Scott
Bridges	Cotton	Kuchel	Smith
Bush	Curtis	Martin	Wiley
Butler	Dirksen	Morton	Williams, Del.
Capehart	Dworshak	Mundt	Young, N. D.

Republicans against:

Javits Langer

Not voting, but announced for:

Robertson (D.)

Not voting, but announced against:

Douglas (D.) Green (D.) Humphrey (D.)

Absent (illness) and position not announced:

Frear (D.)

Strong Labor Reform Loses

BEFORE the civil rights issue was tossed into the boiling pot of labor reform legislation last week, the public had an opportunity to see how each senator would vote on a clearcut union issue (see left).

The most surprising feature of the vote: Union claims to 55 votes in the Senate (based on their support of candidates in last November's election and their own evaluation of voting records) were proved false. At the most, they appear to have 50 potential votes (a bare majority) in such clearcut issues as this one—and then they'll have to be certain that no one avoids the roll call.

Of course, the McClellan amendment did not become law. (It guaranteed union members freedom of speech, assembly, and criticism of union leaders and granted the secretary of labor the power to subpoena labor leaders and issue injunctions against those found guilty of violating the bill of rights.) Through the second thoughts of leading advocates of states' rights (where they involve civil rights), the unions were able to persuade the Senate to vote a more moderate "bill of rights." Majority Leader Lyndon Johnson (D., Tex.) and Sen. Olin Johnston (D., S.C.) turned the thinking of their fellow Southerners.

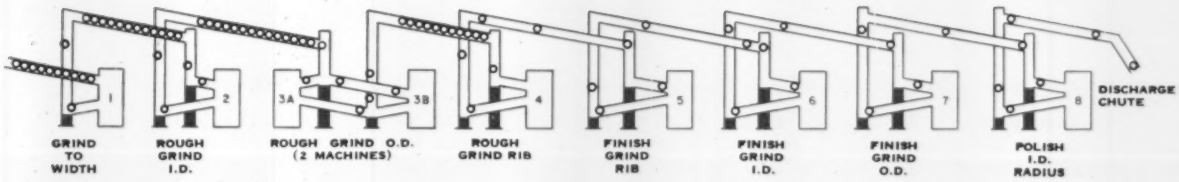
In a memo circulated on the Senate floor, following the first vote, Senator Johnston explained: "The McClellan amendment contains injunctive procedures which, if approved in the labor field, will open the door for such procedures in the field of civil rights . . . (it) contains every evil which I have fought against in the field of civil rights . . . it will open the door for civil rights legislation more severe than has ever been proposed in the U. S. Senate . . . (it) is much stronger than the Douglas civil rights bill . . . this same legislation will set the stage to destroy our school systems in the South."

How will the unions defend this alliance with segregation to their more knowledgeable members?

Substitute Is Easier on Unions

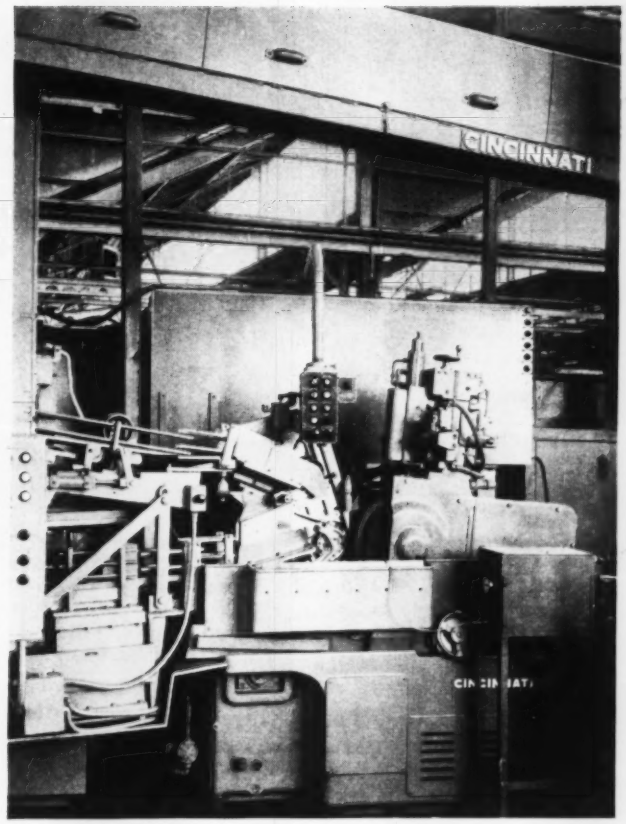
It's difficult to explain the lopsided vote (77 to 14) in favor of the weaker "bill of rights" brought by Sen. Thomas Kuchel (R., Calif.), which replaced Senator McClellan's effort. It does not include subpoena or injunctive powers, rendering the "bill of rights" a lame measure. Only 14 who voted for the McClellan amendment stood their ground and voted against the substitute. Take Senator McClellan's vote for the Kuchel amendment as only an indication of political expediency; perhaps you can go no farther in analyzing the feeling of the Senate. As is usual in highly controversial issues, a majority concluded that half a loaf was better than none.

President Eisenhower will push hard in the House for a stronger labor bill. But observers wonder if an all-out effort by him to influence middle-of-the-road legislators won't destroy any chance for a labor reform bill this session. Both labor and management seem willing to live with the Senate bill. A tougher measure could bring another big fight in the Senate.



CINCINNATI Builds Precision Grinding Lines

. . . to keep your costs in line



MICRO-CENTRIC, one of the fine CINCINNATI FILMATIC Grinding Machines incorporated in the 8-station CINCINNATI Precision Grinding Line diagramed at the top. FILMATIC grinding wheel spindle bearings are an important feature-advantage of this machine. They will never stop the production line.

Every shop faces the problem of cost control. It's one of the prime reasons for installing production lines to automatically perform different operations, or a series of **similar** operations like the Cincinnati Precision Grinding Line diagramed above. This equipment produces higher quality bearing cones at a lower cost than ever before. The line is an independent unit system, developed by Cincinnati automation specialists. Each unit constitutes an individual and complete machine, which can be replaced whenever conditions change. Although there are machines of other makes in this line, Cincinnati takes complete responsibility for everything: the machines, tooling, conveyors, electrical equipment, quality and production.

Parts rolling off this line conform to the highest standards of precision bearing manufacture. In all, there are seven grinding operations and one polishing operation. Grinding stations incorporate Cincinnati Automatic Sizing with feedback controls and automatic washing and demagnetizing of the parts. A banking arrangement for the first three machines takes care of unforeseen difficulties. The automatic handling equipment accommodates five sizes of bearing cones covering a diameter range of 2 to 1. It requires no adjustment whatever in changing from one size to another.

Cincinnati's forward-thinking engineering staff and extensive manufacturing facilities are tops for developing and building production lines of this type. We invite your inquiries on precision cylindrical grinding equipment of any size ranging from versatile toolroom grinders to completely automatic precision grinding lines.

GRINDING MACHINE DIVISION
The Cincinnati Milling Machine Co., Cincinnati 9, Ohio

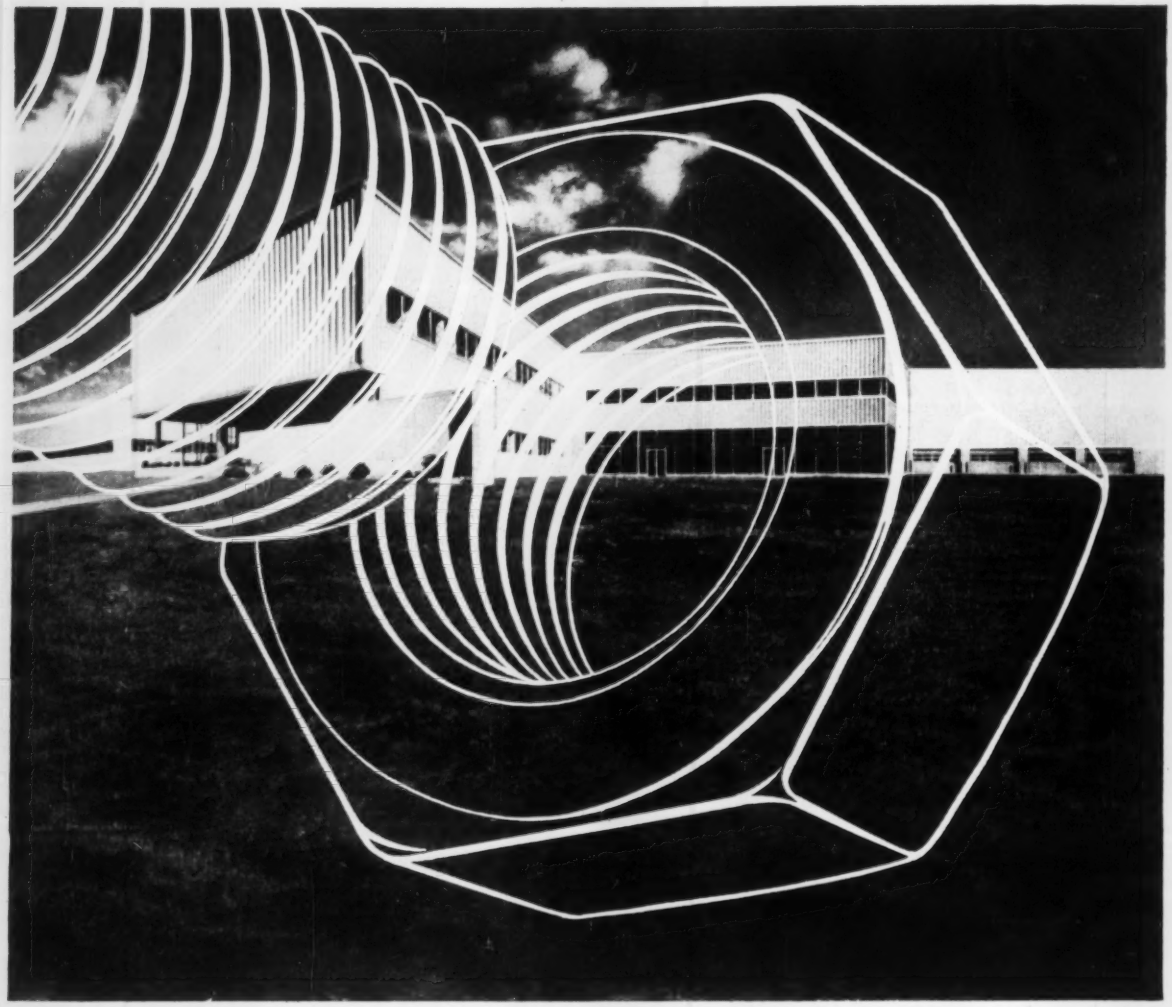
FILMATIC

Anti-friction bearing cone, a high-quality, high-volume component produced at rock-bottom cost on the CINCINNATI engineered and built Precision Grinding Line described here.

CINCINNATI

PRECISION GRINDING MACHINES: CENTERTYPE • CENTERLESS • MICRO-CENTRIC • ROLL • CHUCKING • CENTERLESS LAPPING

CINCINNATI®
GRINDING MACHINE DIVISION



A new name for a dependable old friend

On April 15, Pittsburgh Screw and Bolt shareholders voted to change their company's name to Screw and Bolt Corporation of America.

This new name clearly reflects our continuous expansion and diversification to service the ever increasing and rapidly changing needs of our customers. Today, with four major divisions and plants from Texas to Connecticut, our national scope of business has earned for us the reputation as producers of "America's most complete line of industrial fasteners."

In keeping with this progress, our new, fully integrated Pittsburgh plant, covering—under a single roof—an area equivalent in size to ten football fields . . . offers the utmost in operating efficiency. It is representative of the modern facilities and up-to-date production techniques that keep our quality tops and our service prompt.

We are happy to announce this name change to our many friends and look forward to serve you under our new banner . . . Screw and Bolt Corporation of America.

VMA 6710

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SERVES THE NATION

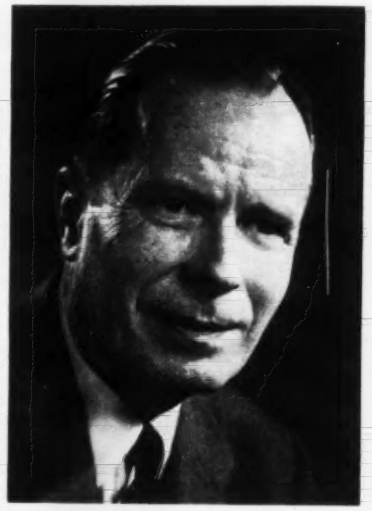
Formerly Pittsburgh Screw and Bolt Corporation • P. O. Box 1708 Pittsburgh 30, Pennsylvania

DIVISIONS: Pittsburgh · Gary Screw and Bolt · Southington Hardware · American Equipment

AMERICA'S MOST COMPLETE LINE OF INDUSTRIAL FASTENERS

Burroughs Moves into Missile Marketing

President Ray Eppert and Defense Sales Manager Jack Lindley say skillful pursuit is key to success in defense business



RAY EPPERT

JACK LINDLEY

Missile Income

(Gross in millions)

1959*	$23.3
1958	26.1
1957	19.5
1956	8.0

*Projected by STEEL.

MISSILE MARKETS are growing. If you're drifting from one contact to another, you'll need to develop a marketing program to get your share.

Jack C. Lindley, sales manager for Burroughs Corp.'s defense contracts organization, calls this marketing concept "skilled pursuit." It has brought the Detroit business machine manufacturer to a point where defense sales accounted for 24 per cent of the $294 million the company earned last year. That's double 1954's defense income.

With the right kind of program, you'll know whether you will want to submit a proposal even before a project is announced.

• **Commercial Knowhow**—In addition to the $77 million worth of computer systems for the Atlas, Burroughs makes data processing systems, fire control, bombing and navigation equipment for all military forces. Its largest prime contract ($124 million) is to build data processing systems for Sage, the Air Force's continental air defense network.

All such equipment is closely allied to Burroughs' commercial product lines.

• **Planned Program**—The company built Norden bombsights during World War II, but its entry into planned defensework began in 1955 when it established the Defense Contracts Organization (DCO) as a marketing group reporting directly to the president. DCO's aims are to acquire profitable defense business that's logically related to the firm's commercial products and that can be carried from the R&D stage through production and into field service.

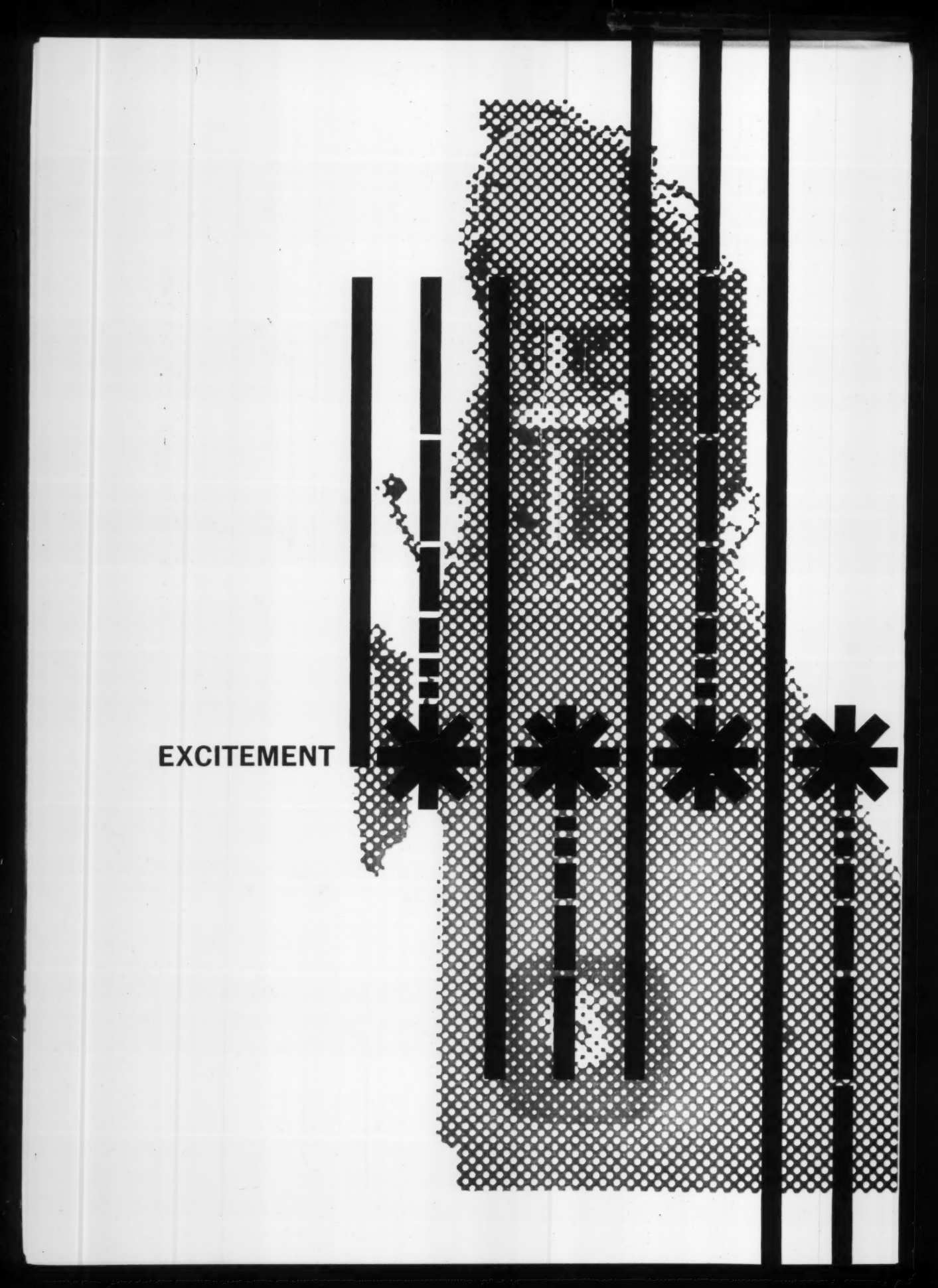
DCO has three divisions—administration, field service, and sales. Administration co-ordinates engineering, production, and cost departments in preparing proposals. It also negotiates contracts. The field service division has 1000 employees to install and maintain delivered equipment.

• **Good Information** — Much of DCO's marketing campaign rests with the sales division's planning department. It has to determine what defense requirements are of interest to Burroughs and on which requirements the company should bid. It also prepares long range trend reports and programs for management.

Mr. Lindley points out that military planners tell qualified contractors what they think defense requirements may be in five or ten years. By projecting this information against Burroughs' experience and skills, the planning section often can give salesmen enough information to identify procurement programs before they are open for bids.

Because research and development work is often none too profitable, DCO signs R&D contracts only on a cost plus fixed fee basis. It considers R&D a means of entry to more profitable production contracts.

• **Brings More Business**—The trend in U. S. missile and defense sales is to turn over to prime contractors more of the total responsibility for R&D, production, installation, maintenance, improvement, and replacement of component systems. Consequently, Burroughs is pitching harder at major contractors than at the defense agencies themselves. It's also playing up the team concept where it joins with several specially skilled firms to submit joint proposals so it can win prime systems contracts of its own.

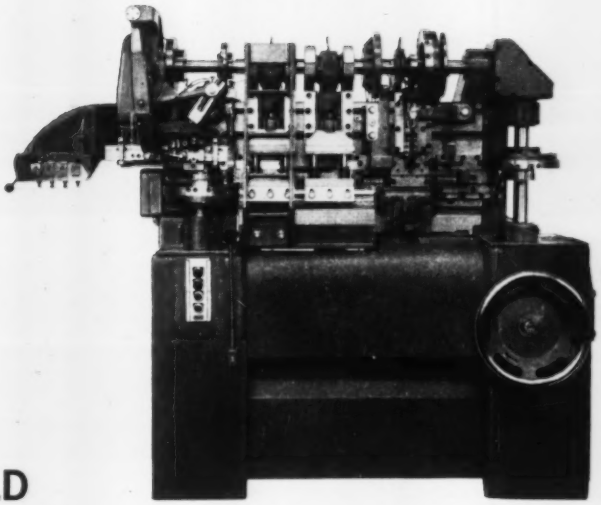

EXCITEMENT

Once in a blue moon, a really exciting new production machine is developed . . . and this is it!

It's the Torrington **Verti-Slide** which promises a genuine revolution in the production of just about everything in strip forming that is now being produced by progressively tooled presses.

Single-handed, the Torrington **Verti-Slide** has already demonstrated its ability to replace as many as six presses in high speed precision production of complex parts.

Cooler heads than ours are telling **us** that it's the most exciting new development in its field in half a century.



IN THE PRODUCTION WORLD

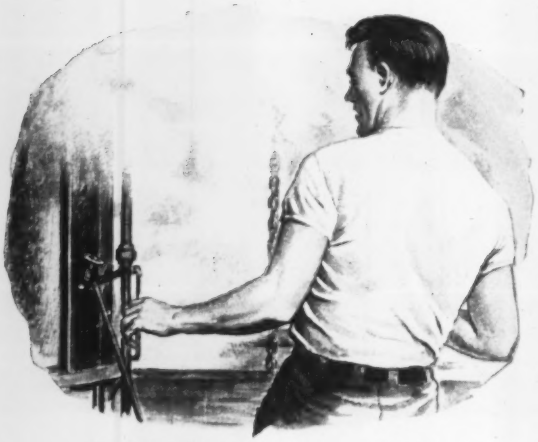
Write or call today for complete data—or a Torrington sales engineer.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT · VAN NUYS, CALIFORNIA · OAKVILLE, ONTARIO

new, cost-reducing chemical for ACID PICKLING BATHS

AMCHEM SERSEAL* reduces heating requirements up to 70%, improves working conditions!



BEFORE SERSEAL, steam vapors and fumes escape from the bath, making working conditions unpleasant, lowering morale.

SERSEAL HAS BLANKETED THE BATH in just 10 seconds. All steam, corrosive fumes and vapors are contained within bath.

Put these 7 important Serseal advantages to work for you!...

1 Save up to 70% in heating costs.

2 Improve working conditions both from a comfort and health standpoint. Steam, heat, fumes and vapors are contained within the bath.

3 Cut warmup time. The blanket prevents heat loss.

4 Less corrosion of surrounding equipment. Corrosive fumes are retained in the bath.

5 Reduce the cost for heating elements.

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*Patent applied for **SERSEAL**

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Chrysler Builds Up Foreign Markets

World's Passenger Cars Outside U. S.

(Millions of units)

	Production	Registrations
1958*	4.33	29.4
1957	3.68	27.7
1956	3.24	24.1
1955	3.09	20.9

*Preliminary.
Source: Automobile Manufacturers Association.

The tieup with France's Simca (above) is the first step as Chrysler lays the groundwork for overseas expansion in automotive and industrial products. President L. L. Colbert predicts that in the next decade annual sales of vehicles made abroad will exceed those of vehicles made in this country.

CHRYSLER is getting back into world markets, but it's avoiding the export route. The automaker is setting up a system so it won't have to ship so many semifinished vehicles which are subject to import duties and restrictive quotas. Chrysler is reluctant to talk much about its plans (it's just getting started), but the groundwork is pretty clear.

Until a year or two ago, Chrysler could have been called the country's export king in passenger cars (Willys Motors Inc., Toledo, Ohio, probably holds the truck record with Jeeps). Chrysler relied mainly on independent distributors. It shipped semifinished bodies and chassis (usually Plymouths) overseas. The distributors would complete the assembly, change the trim, and sell the cars as Dodges, De Sotos, or Chryslers, depending on their franchise agreements.

• **Squeezed Out** — The situation changed as other countries strengthened their economic positions. To protect their own firms, several European countries slapped heavy import quotas and taxes on assembled vehicles coming from America. Other underdeveloped countries, wanting to build up their manufacturing concerns, imposed even heavier duties and quotas. Many required that a large percentage of parts for incoming cars and trucks be made locally. Brazil, for example, has decreed that by 1963, 95 per cent of all parts going into passenger cars and trucks sold in that country must be manufactured in Brazil (STEEL, Sept. 2, 1957, p. 101).

Those tactics knocked the props from under the American export market. In 1955, U. S. factories shipped 211,182 cars out of the country. Exports dropped to 121,758 last year. In 1956, Chrysler exported 65,919 cars and trucks from U. S. and Canadian plants; in '57, it exported 61,973 vehicles.

Ford and General Motors weren't hit as hard as Chrysler because they already had sizable overseas facilities set up to make English Fords and Taunuses, Opels and Vauxhalls.

• **Needs Plan**—But Chrysler had no small car. Its larger ones were at a disadvantage on narrow, unpaved foreign roads. Low octane fuels didn't work well in high compression engines.

In some cases, the company had to offer a lower compression powerplant for its overseas cars.

Chrysler had to take two giant steps to overcome the problems. First, it had to acquire a smaller car line that could compete overseas. Second, it had to develop a marketing system that wouldn't alienate independent distributors but which would enable it to avoid the high taxes and other restrictions placed on exported semiassembled units.

Takes First Step

Last year, Chrysler acquired a 22 per cent interest in Simca, the French automobile firm. It plans

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to acquire another 735,000 shares of Simca stock to double its holdings. Says L. L. Colbert, Chrysler's president: "Simca is an excellent investment opportunity because it puts us in a position to share more fully in a fast growing world market."

Simca is France's second largest car producer. It markets 40 models of cars, trucks, and agricultural implements. The deal, coincidentally, has enabled Chrysler to compete in the U. S. small car market. Only eight models are imported, but in the first two months of this year, Simca registered 5088 cars to put it in fourth place among imports. A year ago it was fifth, with 1757 registrations.

Then a Second Step

After acquiring Simca rights last fall, Chrysler formed an independent company, Chrysler International S. A. (CISA) with headquarters at Geneva, Switzerland. Some of the stock is owned by Simca. CISA's activities are directed by Lynn A. Townsend, Chrysler's group vice president, international operations, who is responsible for all company activities outside the U. S.

Prior to CISA's establishment, the corporation had facilities for assembly and parts in the United Kingdom, Belgium, Australia, and Venezuela. It also had interests in distributor plants in Argentina, Cuba, Denmark, India, Indonesia, Mexico, New Zealand, the Netherlands, Philippines, South Africa, and Sweden. Simca had two French manufacturing plants, interests in facilities in North Africa, Brazil, Argentina, and distributor operated plants in Sweden, Holland, South Africa, and Australia.

Since there is duplication of effort in many of these areas, the apparent plan is to weld most of the outlets into a single marketing organization, under CISA, to handle both Simca and Chrysler products. The French cars will be sold only by Chrysler in this country and the corporation will continue to control its Canadian operations. Simca will sell its own and Chrysler cars in France and certain other areas. CISA eventually seems slated to acquire the job of handling export accessories and replacement parts, as well as products from Chrysler's nonautomotive divisions like Airtemp.

• **Consolidates** — Some of the reorganization is finished. CISA has establishments in the United Kingdom, Netherlands, and Cuba. It's already building Simca cars in a 200,000 sq ft Rotterdam plant.

A 26,000 sq ft plant in Havana, Cuba, and a 179,000 sq ft facility in Capetown, South Africa, will go into production this year.

The most recent affiliation is with Fabricas Auto Mex in Mexico City. Auto Mex will continue to assemble Chrysler cars and now will build Simca and one of the Fargo (Dodge) trucks Chrysler has designed for overseas distribution. Now able to turn out 12,000 cars and trucks annually, Auto Mex is eventually expected to produce engines, transmissions, rear axles.

• **Outlook**—Why all the interest in foreign markets? Asserts Mr. Colbert: "The world market is entering a stage of remarkably rapid growth. In 1958, the U. S. spent nearly $10 billion on roads, a 10 per cent increase over 1957. The other countries of the Free World spent a little over $7 billion—a 20 per cent increase. The International Road Federation expects this rate of growth to continue indefinitely."

That means there will be room for more cars, and Mr. Colbert predicts: "Our studies indicate that by 1965 between 6 million and 7 million passenger cars will be sold annually outside the U. S. and Canada. This means that the world market may be about as big, in units, as the American market."

U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,112
March	576,085	357,049
3 Mo. Totals	1,600,326	1,238,676
April		316,503
May		349,474
June		337,355
July		321,053
August		180,324
September		130,426
October		261,696
November		514,099
December		593,920
Total		4,243,526
Week Ended	1959	1958
Mar. 28	121,832	93,844
Apr. 4	133,878	64,318
Apr. 11	133,202	84,997
Apr. 18	135,934	73,219
Apr. 25	133,403†	58,664
May 2	134,000*	78,434

Source: *Ward's Automotive Reports*
†Preliminary. *Estimated by STEEL

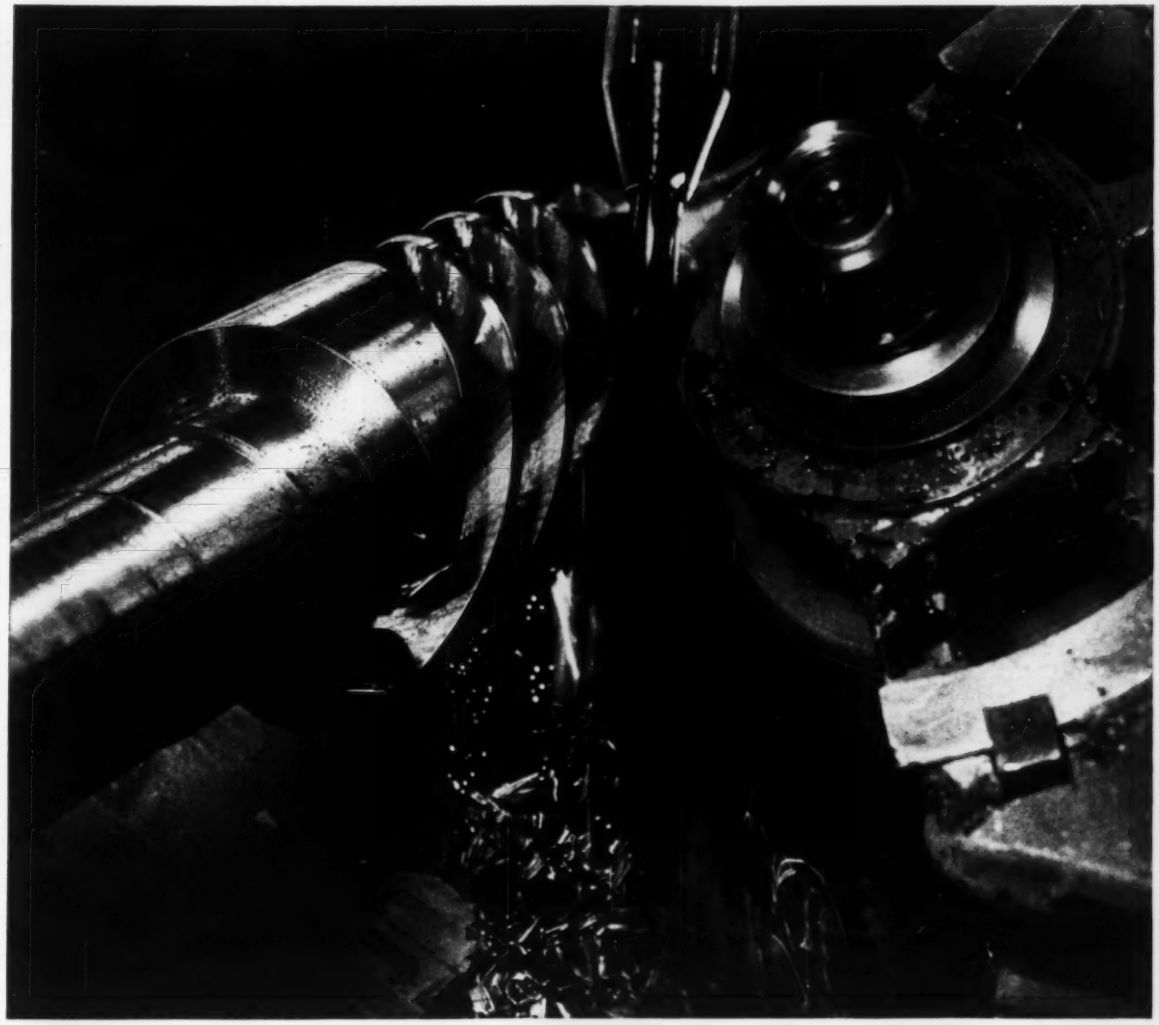
Exhaust Notes

• Looking far ahead, Andrew A. Kucher, Ford's vice president of engineering and research, sees the day when auto engines will be powered by chemical fuel capsules, much like rockets. He says that, in the next 50 years, plastics will be strong enough to replace body panels; and lighter steels, with twice the strength to today's metals, can be used for frames. The research chief also predicts that materials with the structural strength of steel and the transparency of glass will be used for roofs and windows.

• But the Ford Div. is more interested in the present. It has upped May production schedules 16 per cent. James O. Wright, division manager, says this is the seventh successive month of increase. Some 90,000 more units than were initially programed have been built since January. Ford sales are running 63 per cent ahead of last year's, says Mr. Wright.

• More good news comes from American Motors Corp. It's declaring a quarterly dividend of 60 cents a share, the first cash payment since AMC paid 12½ cents shortly after the firm was formed in 1954. Net earnings for the company's first fiscal half, ended Mar. 31, were $33.5 million ($5.66 a share) on sales of $422.5 million. A year ago, first half sales were $227.3 million. George Romney, AMC's president, reports that 154,920 Ramblers have been sold so far against 69,547 in the first half of the last fiscal year.

• Further economy car strength is shown in South Bend, Ind., where Studebaker-Packard Corp. reports first quarter profits of $7.7 million on sales of $115.4 million. S-P sold 51,500 cars in the first three months of this year, 51 per cent above its entire 1958 output.



Aristoloy leaded user reports 25% reduction in time required to cut worm gear threads

Cutting threads on worm gears is an expensive, time consuming operation. Geometry is critical and a considerable amount of metal must be removed. One of the large manufacturers of "worms," desiring to increase production, found that by switching to a *leaded* steel* he could increase both speeds and feeds. Equally important, expensive cutting tools lasted longer because of the freer machining characteristics of leaded steel—delivering more pieces between grinds, and drastically reducing down-time for tool changes.

Strength and hardness tests on the finished part, after heat treating, indicated no detectable difference in physical properties from unleaded grades previously used.

For complete information about Aristoloy leaded or standard analyses carbon, alloy, and stainless grades, write for booklet entitled, "A Complete Line of Leaded Steels," and new Products & Facilities Catalog. *Inland Ledloy License

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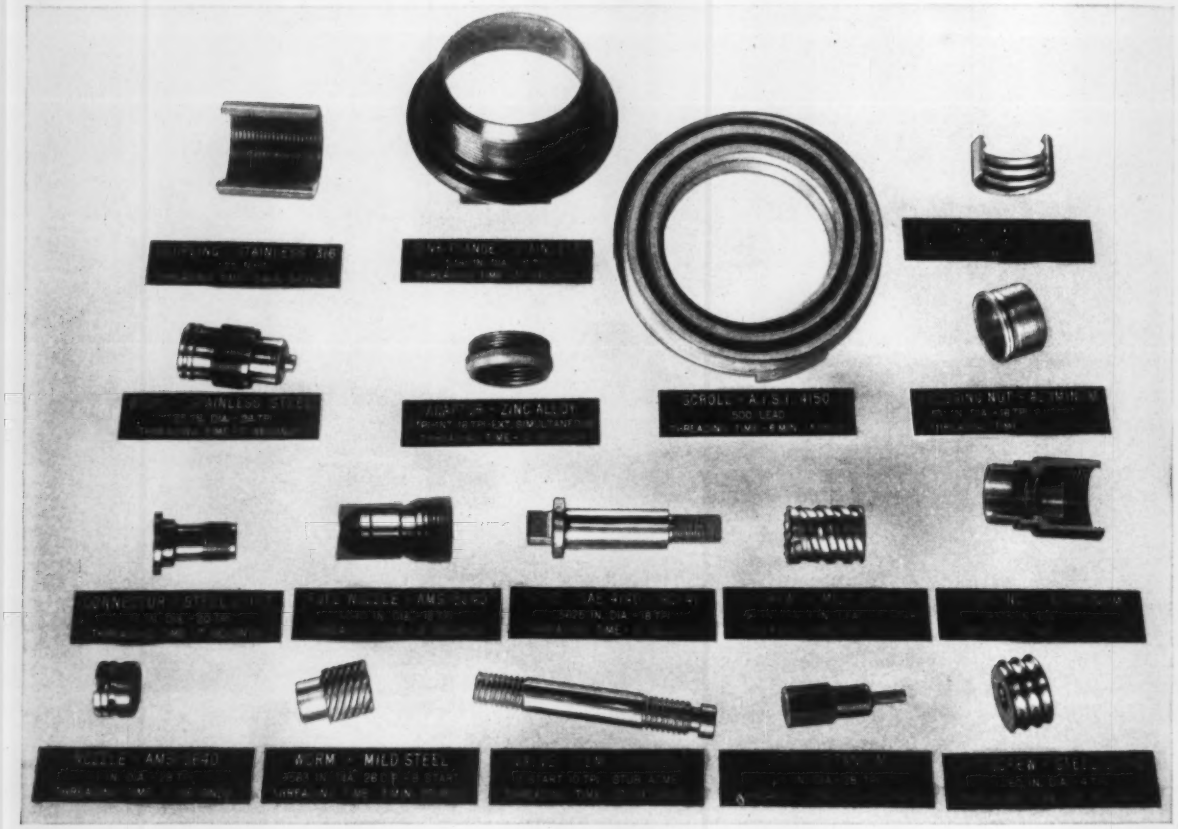

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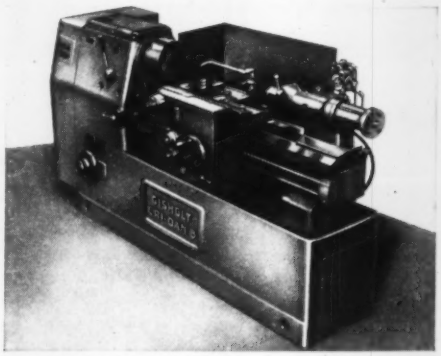

Two models are available. The smaller Model B (shown) offers extreme flexibility with spindle speeds of from 154 to 2808 r.p.m.; 3′ capacity between centers and 15½″ swing over bed. Rugged saddle supports fast-acting threading slide, easily positioned along bed. Complete change-over from job to job can be made in 15 minutes.

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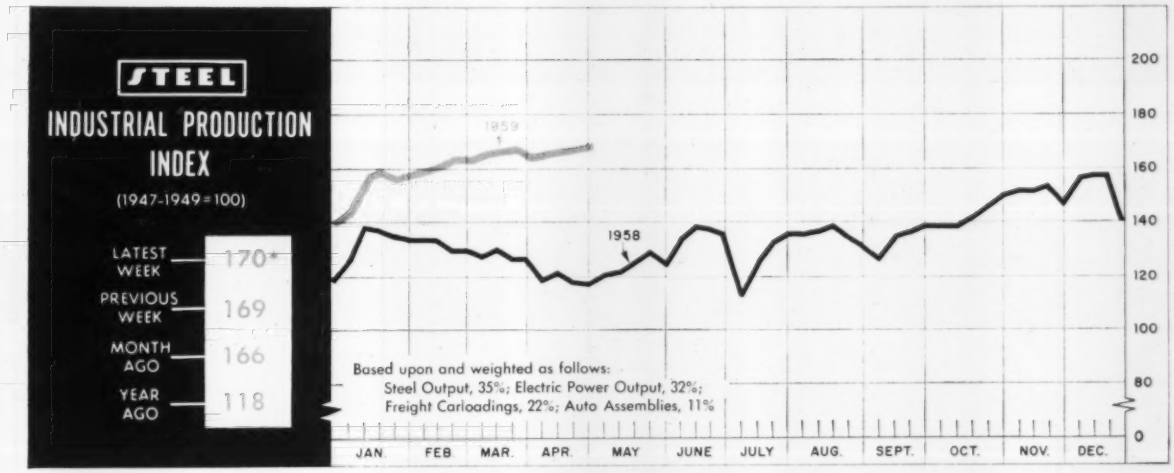

*Week ended Apr. 25.

Recovery Good for Another Year

YOU CAN EXPECT the economy to continue its upward surge for at least another year. That is the consensus of four of Cleveland's leading bank economists expressed at the annual economic forum of the Society of Security Analysts.

Here is what the perspicacious prophets say about five of the basic business indicators:

• **Production** — The Federal Reserve's industrial production index will reach 155 (1947-49=100) next April. It is now at a record 147.

• **GNP** — Gross national product for the second quarter of 1960 will be at an annual rate between $490 billion and $503 billion (most lean strongly toward an even $500 billion). During the first quarter of this year, it was about $464 billion.

• **Prices**—The panel sees comparative price stability over the next year. The wholesale price index of the Bureau of Labor Statistics will edge up to no more than 122 (1947-49=100), compared with the present 119.6.

• **Corporate Profits**—In next year's second quarter, corporate profits before taxes will be between $50 billion and $55 billion (annual rate). During 1959's first quarter, profits rose to about $48 billion. If they continue upward to $50 billion during the current quarter, as some members of the panel believe, then the increase a year from now will be about 10 per cent.

• **Dividends** — Stockholders will make out nearly as well. The panelists predict that corporations will pay dividends of about $14 billion or $15 billion during next year's second quarter, an increase of about 8 or 10 per cent.

Under the prodding of the analysts, members of the panel have taken a flier on some of the specific segments of the economy. One guesses next year's auto production

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,674[1]	2,646	1,289
Electric Power Distributed (million kw-hr)	12,700[1]	12,609	11,206
Bituminous Coal Output (1,000 tons)	8,065[1]	7,950	7,172
Crude Oil Production (daily avg—1,000 bbl)	7,150[1]	7,133	6,288
Construction Volume (*ENR*—millions)	$314.3	$371.3	$325.7
Auto, Truck Output, U. S., Canada (*Ward's*)	170,163[1]	172,715	83,823
TRADE			
Freight Carloadings (1,000 Cars)	640[1]	634	534
Business Failures (Dun & Bradstreet)	304	337	346
Currency in Circulation (millions)[3]	$31,332	$31,365	$30,617
Dept. Store Sales (changes from year ago)[3]	+6%	+18%	−9%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$25,734	$24,321	$25,437
Federal Gross Debt (billions)	$285.6	$285.7	$275.3
Bond Volume, NYSE (millions)	$30.2	$32.3	$30.7
Stocks Sales, NYSE (thousands of shares)	17,788	17,827	13,609
Loans and Investments (billions)[4]	$95.5	$95.2	$92.7
U. S. Govt. Obligations Held (billions)[4]	$30.1	$30.4	$30.2
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	220.6	220.5	196.5
All Commodities[7]	119.9	119.9	119.4
Commodities Other than Farm & Foods[7]	128.1	128.1	125.7

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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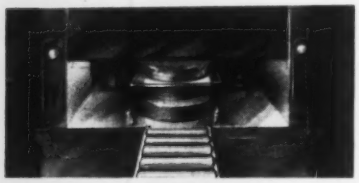

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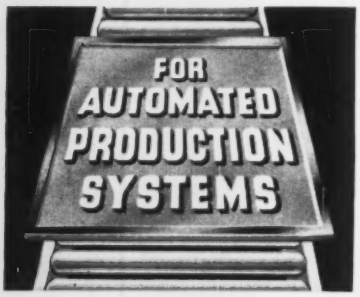

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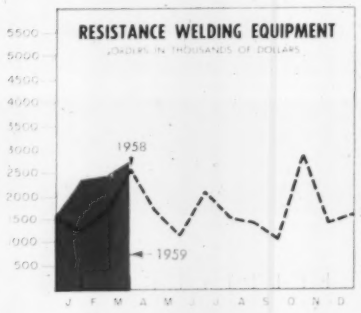
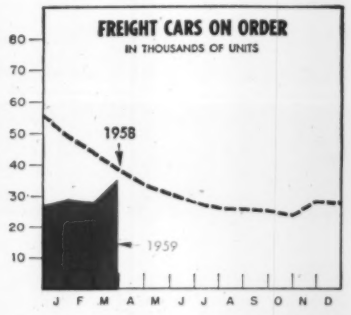
THE BUSINESS TREND





	Net Orders 1959	Net Orders 1958	Shipments 1959	Shipments 1958
Jan.	2,396	1,243	1,427	1,422
Feb.	2,457	1,683	1,889	1,615
Mar.	2,811	2,550	2,179	1,659
Apr.	....	1,684	....	1,963
May	....	1,121	....	1,750
June	....	2,113	....	2,346
July	....	1,534	....	2,342
Aug.	....	1,431	....	1,419
Sept.	....	1,060	....	1,125
Oct.	....	2,885	....	1,559
Nov.	....	1,409	....	1,102
Dec.	....	1,554	....	1,357
Totals	....	20,258	....	19,659

Resistance Welder Manufacturers' Assn

	Awards 1959	Awards 1958	Backlogs (end of month) 1959	Backlogs (end of month) 1958
Jan.	4,007	401	29,470	48,787
Feb.	1,806	287	28,789	43,750
Mar.	10,795	193	35,487	38,027
Apr.	....	278	.....	32,908
May	....	1,370	.....	30,386
June	....	317	.....	27,757
July	....	376	.....	25,994
Aug.	....	1,773	.....	25,611
Sept.	....	1,580	.....	24,982
Oct.	....	781	.....	23,670
Nov.	....	6,295	.....	27,962
Dec.	....	3,830	.....	27,596
Total	....	17,481		

American Railway Car Institute

Charts copyright, 1959, STEEL.

will total 6.5 million units. "There is plenty of room for expansion of credit to cover sales supporting that kind of production."

Another thinks housing starts for 1959 will end close to 1.2 million units. "There should be no difficulty financing that number. Money may cost a little more, but it will be available."

On employment, the forecasters are not worried about the pattern of the recovery, maintaining that it is consistent with past patterns. "The FRB index will be about 153 before unemployment drops back to about 4 per cent of the labor force (seasonally adjusted), which I think is normal," declares one banker. "That will be in the fourth quarter."

NICB Official Concurs

The Cleveland bankers are not the only optimists. Albert R. Sommers, director of the Division of Business Analysis of the National Industrial Conference Board, says most economists feel that higher business levels are in store before the end of the year. He feels that while certain phases of the recovery are nearly played out, others will step in to keep the trend going.

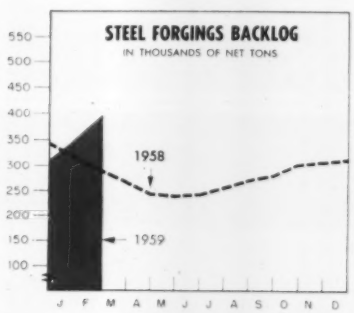
Inventory accumulation, a major influence in the recovery, from now on "will account for only a small fraction of the total rise in national expenditures." Another force which he feels will be a sustaining influence, rather than an expansive one, is housing. Starts are now at a rate commensurate with demand, and he feels that further advance is unlikely. (However, March starts were the highest in history for that month, and total starts for the first quarter exceeded those in the similar quarter of 1955.)

A third expansional force—sales of consumer durables, especially autos —also is beginning to wane, he contends. "While installment debt will continue to rise throughout the year, the major stimulus to 1959 provided by the recovery of consumer durables industries is nearly exhausted." And he claims that the influence of government spending, while still strong, is leveling off. By late 1959, he says government income is likely to equal its spending.

But the recovery in capital goods is just beginning, he declares. "A considerable net stimulus to the business trend is emerging in the machinery area, and at least a moderate advance in associated heavy

	1959	1958	1957
Jan.	3,518	3,047	8,775
Feb.	2,741	3,684	9,769
Mar.	6,146	2,871	10,485
Apr.	....	3,572	4,559
May	....	954	5,389
June	....	3,672	4,369
July	....	5,169	4,332
Aug.	....	3,533	3,924
Sept.	....	4,846	7,463
Oct.	....	3,105	3,674
Nov.	....	5,597	2,832
Dec.	....	4,284	3,992

Industrial Heating Equipment Assn. Inc.



	Shipments 1959	Shipments 1958	Unfilled Orders 1959	Unfilled Orders 1958
Jan.	113	108	353	318
Feb.	112	93	395	289
Mar.	...	92	...	266
Apr.	...	83	...	242
May	...	78	...	240
June	...	88	...	246
July	...	67	...	256
Aug.	...	80	...	279
Sept.	...	89	...	287
Oct.	...	100	...	303
Nov.	...	89	...	307
Dec.	...	113	...	313

U. S. Bureau of the Census. Data based on reports from commercial and captive forge shops with monthly shipments of 50 tons or more.

construction is probable. On balance," he concludes, "a large majority of economists find in these trends reassurance that national business conditions will continue generally upward throughout 1959 and into early 1960."

Capital Goods Catch On

The strength of the capital goods recovery became clearer last week when several industries reported significant monthly gains. One of the most important was the second consecutive gain in net new orders for cutting and forming type machine tools. The March total was $50.55 million, up from February's $45.5 million. Most of the increase came in cutting tools, said the National Machine Tool Builders' Association. Total shipments also increased to $45.65 million.

Makers of resistance welders boosted their orders for the fourth month in a row. (See graph, Page 60.)

March was the best new order month that railroad carbuilders have seen since 1955. Awards in that month alone represented nearly 62 per cent of new business done in all of 1958. (See graph and table, Page 60.)

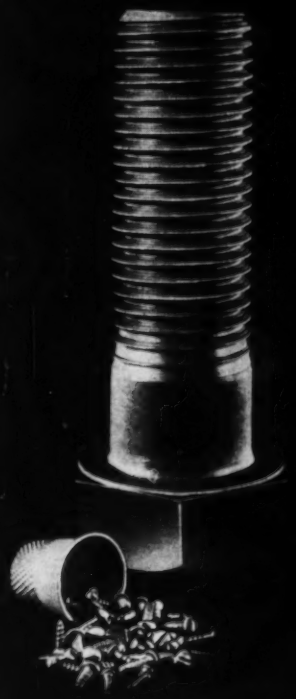
New orders for industrial furnaces in March were the best since September, 1957. (See graph above.)

The biggest surprise of all was the announcement from the Foundry Equipment Manufacturers Association that February was the best month for new orders since November, 1950. The association's index registered 237.1 per cent of the 1947-49 average. The new business from December through February was three times that of the corresponding year-ago period. Reason: Foundries, responding to better business, are dusting off old expansion and modernization plans.

Index Hits Record

The fact that STEEL's industrial production index edged up another point to a record 170 (1947-49 = 100) during the week ended Apr. 26 comes as almost an anticlimax to these optimistic reports. But it is interesting to note that just one year ago, during the week ended Apr. 26, the index reached its recession low of 118. Slight increases in electricity output and freight carloadings overbalanced a minor decrease in auto production. Steel output held near the record level.

One order, one source
. . . every fastener need



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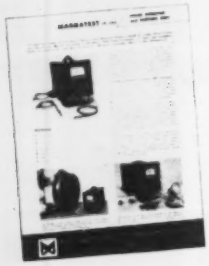
Listed below are only a few of these instruments. You may like additional information or facts for exploration, together with some knowledge of their present uses. Write for data sheets on any of the Magnatest instruments mentioned. Also, we have numerous technical translations on eddy current work that we can supply to you. Tell us briefly your possible application—or ask to have a Magnaflux Engineer discuss it with you.



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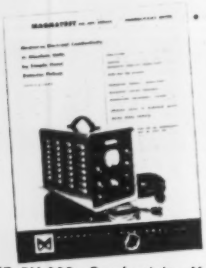
Crack Detector and Sorting Unit
A probe type eddy current meter. Detects and measures relative depth of cracks . . . sorts ferrous and nonferrous metals according to hardness, heat treat condition or alloy . . . compares relative electrical conductivity . . . may be used to "measure" coatings, sheet or film thickness.



MAGNATEST FM-100—Conductivity Meter
Measures electrical conductivity in absolute units by simple hand detector probe. Has almost countless uses because so many properties are related to electrical conductivity. May be used on ingots, bars, or finished parts of any nonmagnetic conductive material.

MAGNATEST FM-500—Elastomat
Provides a convenient means for rapid, accurate measurements of the moduli (elasticity and shear) and damping factor of materials. Torsional as well as longitudinal and flexural moduli can be evaluated. Rapid measurements may be made on practically any solid material.

MAGNATEST FM-201
Magnetic Field Meter
A precision magnetic field meter for making extremely accurate and sensitive measurements of DC magnetic fields. Used for many geophysical applications, in magnetic investigations and testing of magnetic metals.

MAGNATEST FS-300
Magnetic Sorting Instrument
Detects changes in alloy composition, heat treat conditions . . . depth of case . . . carbon content . . . tensile strength and cold working. Also detects and measures change in mass and dimension. For use on magnetic metals. Fully automatic, if desired.

MAGNATEST FW-400
Rod, Tube and Wire Testing Units
For testing nonmagnetic rod, tube and wire. Detects laps, seams, inclusions, voids, concentrated porosity, embrittled areas, "slivers" at mill speeds. Oscilloscope indicates presence of defects. Adjustable for pre-determined requirements, automatic marking or rejection.

MAGNAFLUX — Your "House of Answers" for Nondestructive Testing Problems.

At your service is the most complete variety of highly developed nondestructive testing systems, and industrial knowledge of nondestructive testing. It includes:

MAGNAFLUX-MAGNAGLO to test magnetic metal parts.

ZYGLO for nonmagnetic materials, locates cracks and pores.

SONIZON Ultrasonic Testing of thickness, laminar defects.

STRESSCOAT to find and measure high stress areas.

PARTEK to test unfired ceramics and powder metal parts.

STATIFLUX for locating defects in glass, porcelain, and non-metal coatings.

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Detroit 11 • Dallas 35 • Los Angeles 22

THE HALLMARK OF *Quality* IN NONDESTRUCTIVE TEST SYSTEMS

J. ALLAN MacLEAN
Dodge Mfg. president

GENE E. ZINNIGER
Ormet production-eng. v. p.

M. J. SMITH
Kaiser Steel div. supt.

VERNON L. LOOFBORO
Gardner Machine exec. v. p.

J. Allan MacLean was elected president of **Dodge Mfg. Corp.**, Mishawaka, Ind., effective June 1. He succeeds **Joseph E. Otis Jr.**, elected chairman. Mr. MacLean has been group executive and general manager of Bendix Products Div., Bendix Aviation Corp.

Gene E. Zinniger was appointed vice president-production and engineering, **Ormet Corp.**, New York, which is jointly owned by Olin Mathieson Chemical Corp. and Revere Copper & Brass Inc. Prior to joining Ormet on its establishment in 1956, Mr. Zinniger was with Revere Copper & Brass. He had previously served for 25 years with Aluminum Co. of Canada Ltd.

Marc W. Pender was appointed vice president of **Bettinger Corp.'s** new Package Service Station Div., Milford, Mass. He was formerly marketing director for Avco Mfg. Corp. and a former vice president of Magic Chef Inc. His appointment follows the recent purchase by Bettinger of a prefabricated service station division developed by Avco Mfg. Co.

Michel Biscayart was elected president of **E. W. Bliss Co.** (Paris), subsidiary of E. W. Bliss Co., Canton, Ohio. He previously served for 30 years with Norton Co., for the last 13 years with Norton Behr-Manning Overseas Inc.

Richard E. Reich was appointed vice president-sales, **Proto Tool Co.**, Los Angeles, member firm of Pendleton Tool Industries Inc. He was product sales manager.

M. J. Smith was appointed superintendent, Iron & Steel Div., at **Kaiser Steel Corp.'s** Fontana, Calif., plant. He was with the Steel Div. of Ford Motor Co. as manager of the Open Hearth & Electric Furnace Dept.

Kenneth A. Henn fills the new post of domestic sales manager, **Jones & Lamson Machine Co.**, Springfield, Vt. Former manager of the Detroit office, he is succeeded by **Lewis Bernardini.**

James D. Moore, production manager, was named plant manager at **Vitro Uranium Co.'s** uranium mill in Salt Lake City, Utah.

Forst L. Robertson was appointed vice president-sales manager, **Keokuk Steel Casting Co.**, Keokuk, Iowa. **Karl G. Jansson** continues as vice president-director of sales of companies associated with Keokuk (Mid-Continent Steel Casting Corp. and Hica Inc.). **Jack Dimond** was appointed executive vice president of Mid-Continent Steel Casting Corp., Shreveport, La.

Harold A. Goldsmith was elected president, **Magnetic Amplifiers Inc.**, New York. **Herbert Herz** was elected executive vice president.

Frank L. Magee, president of **Aluminum Co. of America**, was named chief executive officer of the company. Named to serve as executive vice presidents are **M. M. Anderson, Leon E. Hickman**, and **Lawrence L. Litchfield Jr.** (former vice presidents). Newly elected vice presidents are **Theodore W. Bossert** and **Robert A. Learnard.**

Vernon L. Loofboro was appointed executive vice president, **Gardner Machine Co.**, Beloit, Wis. He was general manager, and previously manager, Abrasive Div. Gardner is a subsidiary of Landis Tool Co.

Ade Czarnecki was made chief engineer of **Anchor Steel & Conveyor Co.**, Dearborn, Mich. He was chief draftsman.

H. B. Newell, president, **Ohio Forge & Machine Corp.**, Cleveland, was elected to the added post of chairman to succeed **F. H. Chapin**, who died in August, 1958. **C. E. Thayer**, vice president, was elected executive vice president to succeed the late **R. B. Tripp. E. F. Awig**, former vice president and chief engineer, was elected vice president-engineering and manufacturing. **W. M. Husband**, former secretary, is now secretary and treasurer.

Robert A. Heath was made manager of engineering, **Warner Electric Brake & Clutch Co.**, Beloit, Wis. He was chief engineer, Walker Mfg. Co.

Edwin R. Stroh fills the new post of vice president and director of sales, **Electric Auto-Lite Co.**, Toledo, Ohio.

Alfred C. Harris joined **Commercial Shearing & Stamping Co.**, Youngstown, as manager of sales, Rotoform Products, a new post. He was sales manager, Metal Dynamics Div., Cincinnati Milling Machine Co.

Arthur G. Zahn was appointed vice

SHAO C. FENG
Silicon Transistor positions

JOHN CLARKE

PAUL A. MONGERSON
Chicago Screw vice president, factory manager

W. DEAN GWIN

president, **Chesterfield Steel Service Co.** and **Coil Steel Corp.**, Cleveland.

Shao C. Feng was made manager of product planning, **Silicon Transistor Corp.**, Carle Place, N. Y. He was head of advanced computer circuit development for Remington Rand Univac. **John Clarke** was made manager of applications engineering. He was with General Instrument Corp.

Timken Roller Bearing Co. announces appointment of **Walter Jehu** as managing director of **Australian Timken Proprietary Ltd.**, Ballarat, Australia. He replaces the late **Elmer Schweitzer.**

Bullard Co., Bridgeport, Conn., appointed **Francis L. Dabney** executive vice president; **Paul L. Smith**, secretary-treasurer.

James S. Anderson, vice president-sales, **Babcock & Wilcox Co.'s** Tubular Products Div. at Beaver Falls, Pa., was appointed general manager of the division.

Paul A. Mongerson was promoted to vice president; **W. Dean Gwin** to factory manager of **Chicago Screw Co.**, Bellwood, Ill., a division of Standard Screw Co. Mr. Gwin succeeds Mr. Mongerson, who, in addition to new duties, will assist President **W. D. Corlett** in the general management of the company.

A. J. Tomasek was named president and chief executive officer of **Mississippi Glass Co.**, St. Louis. He continues to serve as president, chief executive officer and chairman of Walsh Refractories Corp., St. Louis, subsidary.

Edward L. Maguire was appointed sales manager, **Kittell-Lacy Inc.**, El Monte, Calif. He was sales manager, Alloy Fabrication Div., Standard Steel Corp., Los Angeles.

Stanley C. Adamek was appointed general manager, **Pheoll Mfg. Co. Inc.**, Chicago. He has been assistant general manager for the last year. He joined the firm in 1953 and has served as plant manager, works manager, and manufacturing manager.

A. H. Matthaeus was elected president and general manager, **International Ball & Roller Bearing Corp.**, Seattle. **W. P. Greenawalt** was named chairman.

Fred A. Meunier joined **Magnaflux Corp.**, Chicago, as senior engineer, Electronic Engineering Dept. He served for 19 years with Republic Steel Corp., and most recently was project engineer, Electro-Mechanical Research Center.

Dr. William C. Leone was made manager, Industrial Systems Div., Hughes Products Group, **Hughes Aircraft Co.**, Los Angeles.

Joseph W. McNichols was appointed president, **Daystrom Furniture Div.**, Olean, N. Y., Daystrom Inc.

Alfred W. Knight was elected president, **Western Precipitation Corp.**, Los Angeles. He succeeds **Walter A. Schmidt**, who remains as chair-

FRANCIS L. DABNEY
Bullard executive v. p.

JAMES S. ANDERSON
B&W Tube Div. gen. mgr.

STANLEY C. ADAMEK
Pheoll Mfg. gen. mgr.

ALFRED W. KNIGHT
Western Precipitation pres.

EF Continuous Galvanizing Lines

assure unvarying uniformity of anneal and coating; high daily outputs with no un-scheduled downtime.

TOTAL DESIGN CAPACITY IN EXCESS OF 2,460,000 TONS PER YEAR*

Tailored to meet your specific requirements and incorporating the most advanced techniques, EF continuous galvanizing lines assure users high heating efficiency — accurately controlled cycling — and month after month of continuous, trouble-free, 24 hours a day, 7 days a week operation. You get maximum production — and return — per dollar invested.

The unvarying uniformity of product physicals — the bright even spangle — and the tight bond of the coating, preventing chipping or flaking — assure high market acceptance, and make subsequent forming and fabricating operations more efficient and less costly.

For utmost efficiency and economy on galvanizing operations, and all other continuous, or batch, heat treating of ferrous, non-ferrous or alloy materials, you'll find it pays to consult The Electric Furnace Company heat processing engineers.

* Tonnage output will vary depending upon width and gauge of strip being processed.

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THE ELECTRIC FURNACE CO.

Gas-fired, Oil-fired and Electric Furnaces for Heat Treating any Product, Using any Process, any Hourly Output.

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WILLIAM A. MADER
Oberdorfer Foundries v. p.

WILLARD E. BREWER
Tube Reducing post

EMIL E. SELL
National Twist Drill purchasing

HERBERT E. HIRSCHLAND
Metal & Thermit v. p.

WILLIAM J. STRANDWITZ JR.
Capitol Products exec. v. p.

WILLIAM O. ANSHUTZ
Greaves Machine Tool post

man. Mr. Knight was executive vice president and general manager.

Herbert E. Hirschland was elected vice president-commercial development, **Metal & Thermit Corp.**, New York. He was director of commercial development. Functions of the department include product development, market development, and market research.

William J. Strandwitz Jr. was named executive vice president, **Capitol Products Corp.**, Mechanicsburg, Pa. He was a vice president and chief executive officer of Read Standard Div., York, Pa. In his new capacity, he has charge of company national sales and manufacturing operations.

J. Paul Games was named superintendent of industrial relations, **Midwest Steel Corp.**, the new plant to be built by National Steel Corp. in Porter County, Ind. Mr. Games has assumed his new duties and is working both at Weirton Steel and at Midwest's temporary offices in Valparaiso, Ind.

William O. Anshutz was appointed manager, Gear Div., **Greaves Machine Tool Co.**, Cincinnati. He has been engaged in consulting engineering work on gear manufacturing for several years. Previously he was with Cincinnati Gear Co. and with Cincinnati Milling Machine Co.

Edward W. Moffitt was made general manager, **Midvale-Heppenstall Co.**, Philadelphia. He was with Heppenstall Co., parent firm, as general manager, Bridgeport, Conn., plant.

Robert L. Bristol was made sales manager, Punch Div., **Pivot Punch & Die Corp.**, North Tonawanda, N. Y. He was sales engineer for special tooling.

John T. Lurcott was named product engineer, Product Engineering & Development Dept., **Alloy Tube Div.**, Union, N. J., Carpenter Steel Co.

Michael Zara was made production control manager, **Servo Corp. of America**, New Hyde Park, N. Y.

William A. Mader was named vice president-technical services, **Oberdorfer Foundries Inc.**, Syracuse, N. Y., a newly established division which combines departments of quality, service, and laboratory control. In this connection, Mr. Mader will represent Oberdorfer and its subsidiary, Oswego Castings Corp., in the field, giving a series of lectures to users of castings. He most recently served Oberdorfer as chief metallurgist and director of laboratories.

Willard E. Brewer was appointed special products manager, **Tube Reducing Corp.**, Wallington, N. J. He was previously associated with Timken Roller Bearing Co.'s Steel & Tube Div., Canton, Ohio, for more than 22 years.

Emil E. Sell succeeds **Richard B. Kane**, retired, as director of purchases, **National Twist Drill & Tool Co.**, Rochester, Mich. **John S. MacDonald** replaces Mr. Sell as purchasing agent. **Clarence J. Cadieux** replaces **Arthur L. Norton**, retired, as comptroller.

Richard T. Thornton was named general manufacturing manager, Hardware & Accessories Div., **Ford Motor Co.**, Dearborn, Mich. Former manager of the Indianapolis steering gear plant, he succeeds **Paul A. Miller**, resigned.

Max de Zemplen was appointed division manager for **Anti-Corrosive Metal Products Co. Inc.**, Castle-on-Hudson, N. Y. He has headquarters in Los Angeles. Mr. de Zemplen was general sales manager, Briles Mfg. Co., and Voi-Shan Mfg. Co., a division of Pheoll Mfg. Co.

OBITUARIES...

Paul A. Montanus, 76, president, **Springfield Machine Tool Co.**, Springfield, Ohio, died Apr. 21.

George W. Kohlmeyer, 74, retired vice president-manufacturing, **W. A. Case & Son Mfg. Co.**, Buffalo, died Apr. 18.

W. F. Harrah, 87, co-founder and honorary chairman, **National-Standard Co.**, Niles, Mich., died Apr. 16.

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...especially Western Brass...
has done...is doing...
and will do...many jobs better than
any other metal. Western Brass
is "tailor-made" for
each job.

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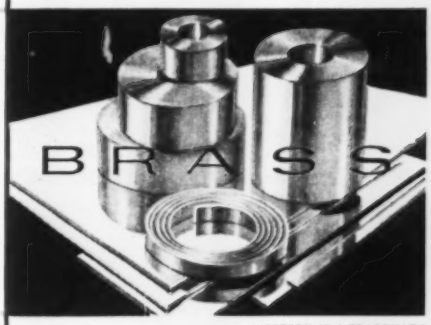
*



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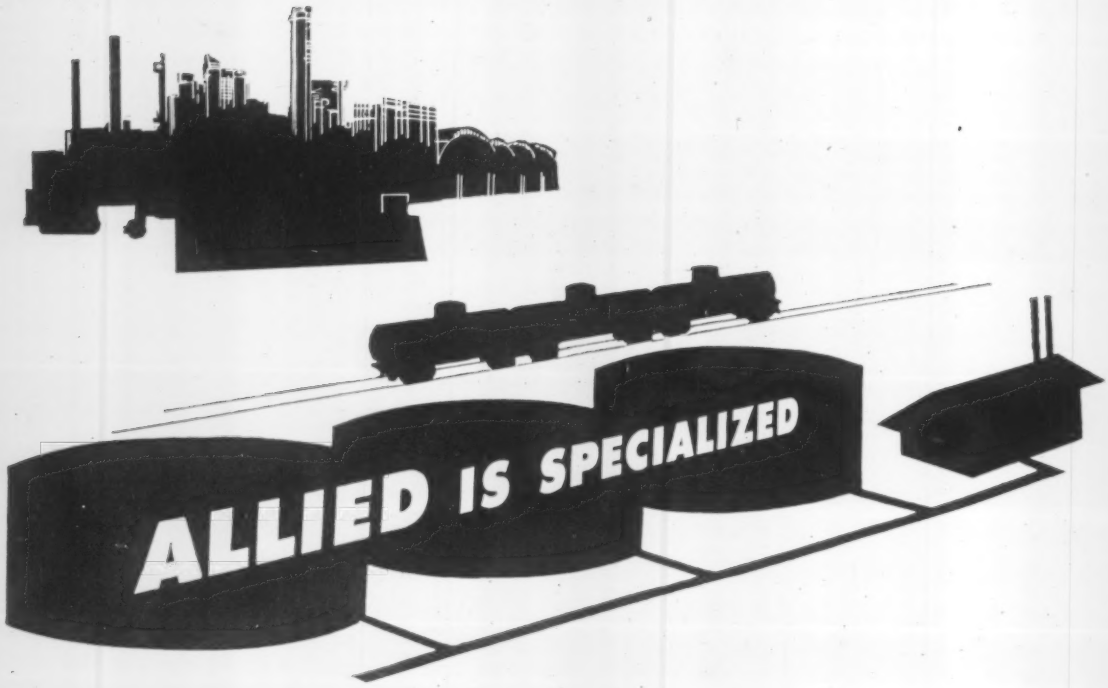

You benefit . . . because our business is fuel oil!

- You get the exact grades of fuel oil you need—at lowest possible cost.
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Harvester Cuts Operations At McCormick Works

INTERNATIONAL HARVESTER Co. will gradually discontinue production of farm implements at its McCormick Works, Chicago, terminating output in three years.

Castings will continue to be made in the nodular iron foundry and some operations will be carried on in the malleable iron foundry.

• **Basis for Decision** — Mark V. Keeler, vice president of the Farm Equipment Group, points out that a number of trends were responsible for the decision. Most important:

1. Decreasing number of U. S. farms has resulted in an excess of Harvester implement capacity.

2. Increasing average size of farms and consequent larger size and capacity of farm implements. The buildings at McCormick Works are not suited to production of these larger machines.

3. The age and condition of plant buildings. Only 4 per cent are less than 41 years old; 85 per cent are from 48 to 87 years old.

4. Declining export market as foreign countries continue to make more of their own requirements.

Factories at Canton and East Moline, Ill., and Memphis, Tenn., will make most of the types of implements now made at McCormick Works. Production of malleable iron castings will be transferred to Waukesha, Wis.

• **Imports Small Tractor** — The company has started importing and marketing in the U. S. small diesel powered farm tractors which are produced by its subsidiary, International Harvester Co. of Great Britain Ltd., Bradford, England.

Mr. Keeler points out that the 30 to 35 hp tractors are additions to the company's broad line of farm tractors and do not replace any American-made Harvester tractor. It is being brought to the U. S., he says, to compete with small farm tractors being sold in this country by other manufacturers, foreign and domestic.

While this is the first time Harvester has imported tractors, it has imported various other farm implements for a number of years. Most foreignmade Harvester products come from Canada and a few from Mexico, where the company has a subsidiary.

Crucible to Buy Firm

Crucible Steel Co. of America, Pittsburgh, has arranged to set up a Canadian company to acquire the steelmaking facilities of Sorel Industries Ltd., Sorel, Que. The property includes three electric arc furnaces with an annual capacity of 35,000 net tons; a 16 in., 3 high, 4 stand bar mill with annual rolling capacity of 22,500 tons; nine forging hammers; one, 2000 ton hydraulic forging press; and a steel foundry.

Foundry Doubles Capacity

New Iron Foundry Co., Romulus, Mich., is erecting an addition that will double its plant capacity. Its output includes die blocks, machine tool and experimental castings. In addition to gray iron, the company casts alloyed iron and semisteel. Development of a new method on certain types of work, New Iron claims, enables it to duplicate the accuracy of shell molding.

Stelco Plans Expansion

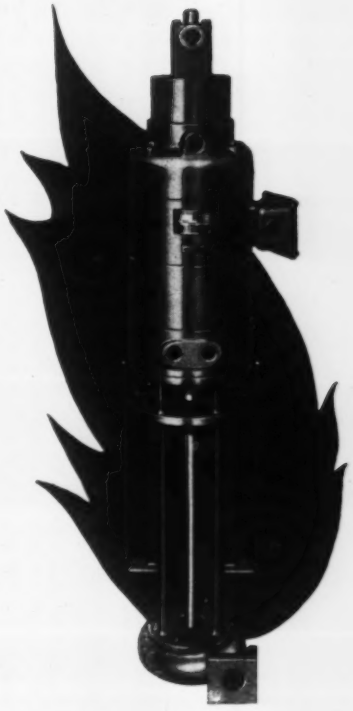
Expansion plans of the Steel Co. of Canada Ltd., Hamilton, Ont., involve an estimated expenditure of $80 million in the next two or three years. The program is designed to increase steelmaking capacity nearly 25 per cent. Major projects include:

1. A 300 ton open hearth, to be added to No. 3 open hearth shop, which was completed in 1953.

2. A 250 ton pouring crane and an extension to the main pouring aisle in the No. 2 open hearth shop.

3. Additional warehouse facilities

(*Please turn to Page 72*)



RUTHMAN MOLTEN METAL PUMPS

For Handling Molten

• Lead • Zinc • Salt
• Spelter • Babbitt

Gusher Molten Metal Pumps are tested under operating conditions and have proved that they will give efficient performance under recommended temperatures and conditions of operation. Models 15028E and 15028XE are suitable for temperatures up to 1000° F. Model 9075M with or without closed water jacket for temperatures up to 750° F. Other models from ¼ HP to 10 HP. Write for information and illustrated folder.

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• MOLTEN METAL PUMPS • COOLANT PUMPS
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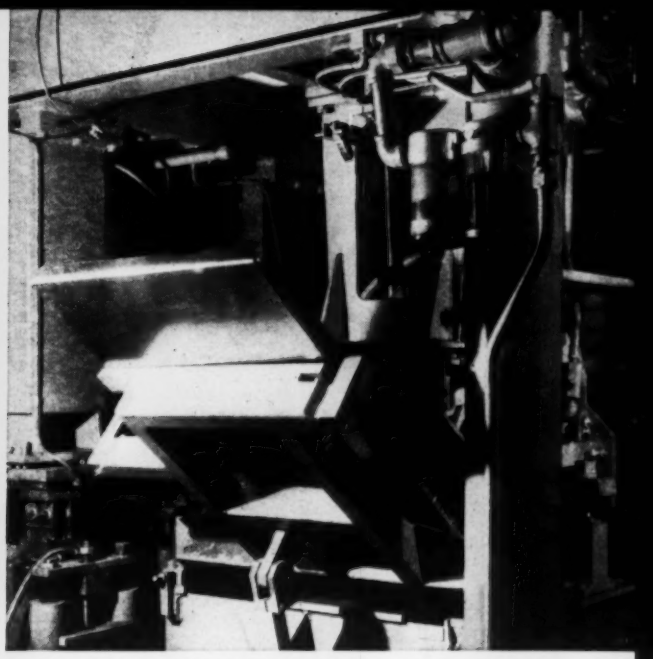
1825 Reading Road
Cincinnati 2, Ohio

Pittsburgh Steel's [illegible] sheet gives [illegible] appearance to the new [illegible] [illegible] [illegible]

Fully as formable as Pittsburgh Steel's regular plain sheets, the new patterned sheets are put through Westinghouse's normal production process at Mansfield, Ohio.



Top quality in sheet, plain or patterned, is needed to serve Westinghouse's automated equipment. Here, patterned sheet is formed into the shell of the L-1000.

First time pattern-rolled steel available in wide steel sheets

Wide patterned sheet steel—a new product and a Pittsburgh Steel Company "first"—has been put to work by Westinghouse Electric Corporation on its new line of custom "furniture-styled" appliances.

Wider than any patterned sheet available until now, the new sheet is designed and finished to appear like fine-grain leather. It's being used as the outer shell on Westinghouse's newly introduced L-1000 Laundromats and D-1000 automatic electric dryers.

Pittsburgh Steel's Allenport (Pa.) Works is the steel industry's first producer of patterned, flat-rolled carbon steel in widths up to 48 inches—about twice the width previously available.

Patterned sheet is available in coils or cut lengths, in either commercial or drawing quality. As flat, formable and drawable as Pittsburgh Steel's plain sheet, super-wide pattern-rolled steel goes through Westinghouse's regular production process without special machine changes.

Patterned sheets are given 27 piercings and notchings, in addition to a four-side flange. At Westinghouse, the rolled-in pattern emerges unmarred, even on corners and bends.

Next step is welding and then the sheet is formed into the appliance's shell. After bonderizing, the shell gets a sprayed-on enamel coat which is baked. Soft wood-toned in color, the enamel helps emphasize the attractive, but rugged, leather-like finish.

• **Shape of Tomorrow**—But surface is only one quality standard Pittsburgh Steel meets. The Shape of Tomorrow theme in Westinghouse appliances requires clean, pronounced lines. As a result, bends and corners are sharper on the L-1000 and D-1000 models. This imposes extra requirements for uniformity of hardness so that the patterned sheets won't overbend or spring back.

Flatness specs must be met rigidly so that the finished appliance isn't plagued by an "oil-canning" effect.

Westinghouse has automated so much of its production sequence at the Mansfield, Ohio, plant that steel suppliers know gauge and dimension specs must be held rigidly. If they aren't, rejects and scrap losses would mount rapidly.

Pittsburgh Steel's patterned sheets are performing so well at Westinghouse and in other applications that a promising future is being predicted for the product, especially in the automotive, appliance and building industries.

Patterned sheets are suitable for any application where decorative appeal is needed, in addition to steel's strength, formability and economy.

Produced on one of the steel industry's most modern sheet mills, patterned sheet complements Pittsburgh Steel's full line of hot and cold-rolled carbon steel products.

Supplementing this product is cold-rolled strip steel produced by the Thomas Strip Division, Warren, Ohio, whose line also includes pattern-rolled strip—plain or with a variety of protective and decorative coatings. These include copper, brass, nickel and zinc.

If you are a manufacturer of a product made from flat-rolled steel, you can't afford to pass up potential improvements in your production process or the sales zip this imaginative patterned steel can give your product. Contact any of the district sales offices listed on this page.

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

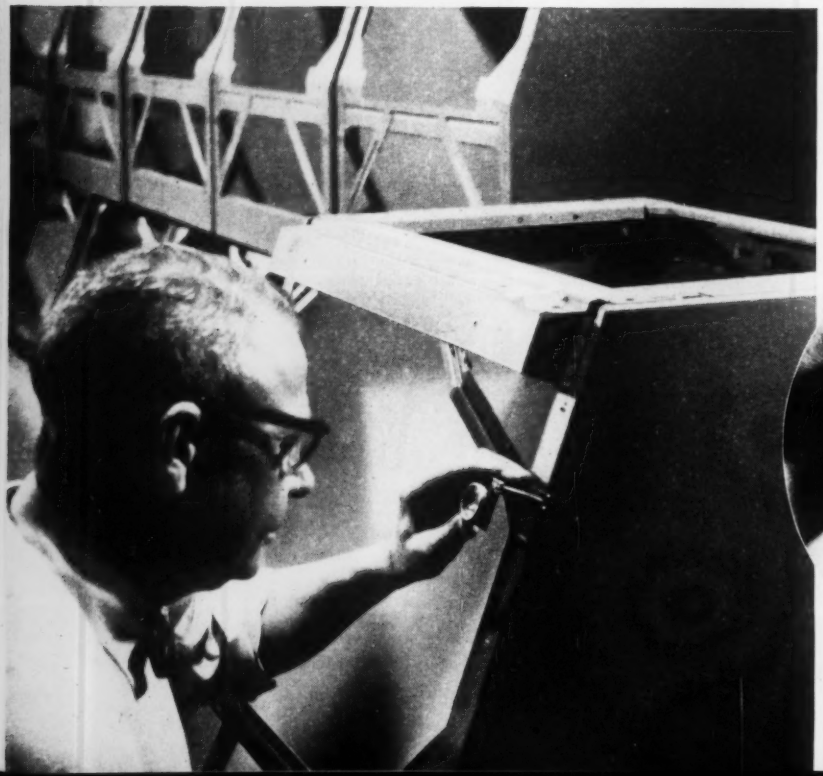
DISTRICT SALES OFFICES

Atlanta	Cleveland	Detroit	Los Angeles	Pittsburgh
Chicago	Dayton	Houston	New York	Tulsa
			Philadelphia	Warren, Ohio

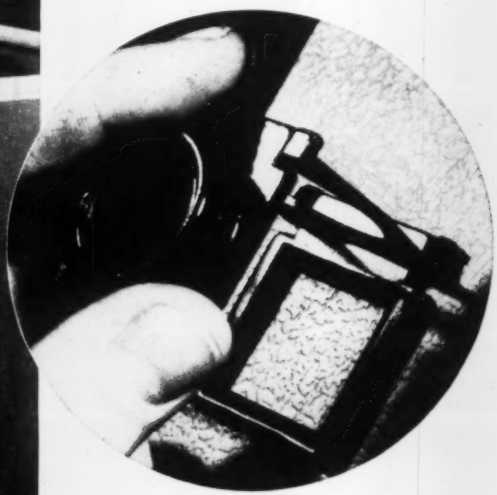
Pittsburgh Steel's patterned sheet gives leather-appearance to the new custom furniture-styled L-1000 Laundromats shown here on way to final inspection.

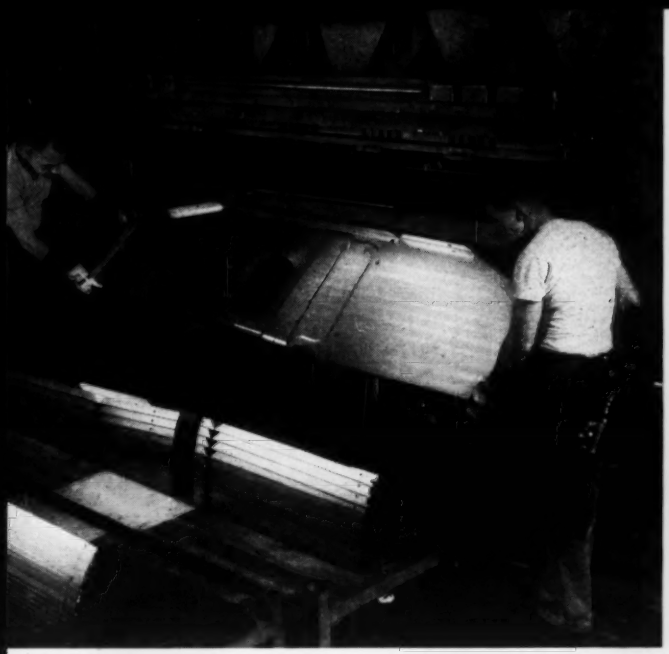
An Industry First . . .

Pittsburgh Steel Has Beauty of Leather On Westinghouse 'Furniture-Styled Twins'



Soft, rich finish on a group of Laundromat shells is checked at one of the many quality inspection points. Close-up shows detail of the L-1000's pattern.





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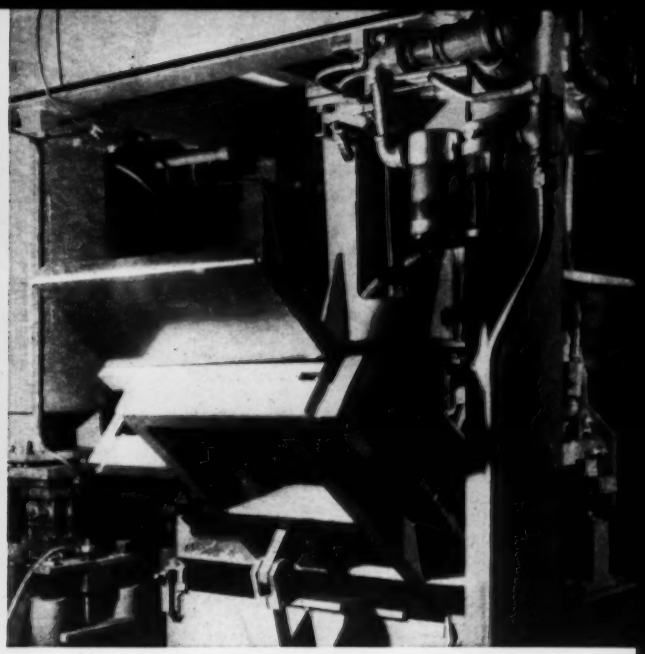

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Produced on one of the steel industry's most modern sheet mills, patterned sheet complements Pittsburgh Steel's full line of hot and cold-rolled carbon steel products.

Supplementing this product is cold-rolled strip steel produced by the Thomas Strip Division, Warren, Ohio, whose line also includes pattern-rolled strip—plain or with a variety of protective and decorative coatings. These include copper, brass, nickel and zinc.

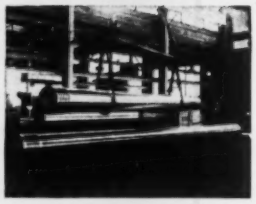
If you are a manufacturer of a product made from flat-rolled steel, you can't afford to pass up potential improvements in your production process or the sales zip this imaginative patterned steel can give your product. Contact any of the district sales offices listed on this page.

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES

Atlanta	Cleveland	Detroit	Los Angeles	Pittsburgh
Chicago	Dayton	Houston	New York	Tulsa
			Philadelphia	Warren, Ohio



Your parts last longer when they're

SHENANGO CENTRIFUGAL CASTINGS

Your machine parts, ferrous or non-ferrous, are subject to stress, strain and friction, day after day, year after year . . . so specify Shenango . . . and see what a difference this makes!

Shenango's centrifugal casting process insures longer life because of finer, more uniform, *pressure-dense* grain to begin with . . . free of inclusions, porosity, blowholes and other weakening defects. Then, far less machining is needed and your part is stronger . . . to last and last *and last!*

Shenango's modern and fully-equipped shops will supply you with ferrous or non-ferrous symmetrical parts in virtually any shape or size . . . rough, semi-machined or precision-finished to your most exacting specifications. For full details, write: *Centrifugally Cast Products Division,* The Shenango Furnace Company, Dover, Ohio.

SHENANGO CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL • ALLOY IRONS

(*Concluded from Page 69*)

for tin plate coils—their production will commence later this year.

4. Enlargement of mill buildings and rearrangement of processing equipment.

5. New maintenance shops and service buildings.

6. Development of ore and coal properties.

7. Additions and improvements in the finishing works.

U. S. Steel Expands Mill

National Tube Div., U. S. Steel Corp., will nearly double the stainless steel tubing capacity of its Ellwood (Pa.) Works. Two new buildings, containing about 40,000 sq ft of manufacturing space, will be erected to house additional equipment. Production of stainless steel tubing will continue during the construction period, which will extend over about 18 months.

Among processing facilities to be installed will be a controlled atmosphere annealing furnace, inside and outside surface conditioning equipment, additional tube reducing bar drawing equipment, and cleaning and descaling equipment. Finishing equipment will include straighteners, abrasive cutoffs, and profiling machines. Numerous nondestructive types of testing equipment will be acquired.

A deep drilling machine will be installed in connection with the present seamless hot mill facilities to provide for the increased tubing requirements.

Werner Leases Foundry

Werner Foundry & Machine Co., Lansdale, Pa., has leased the former Carver foundry on Germantown Pike, Fairview (Norristown), Pa. Werner will operate both facilities.

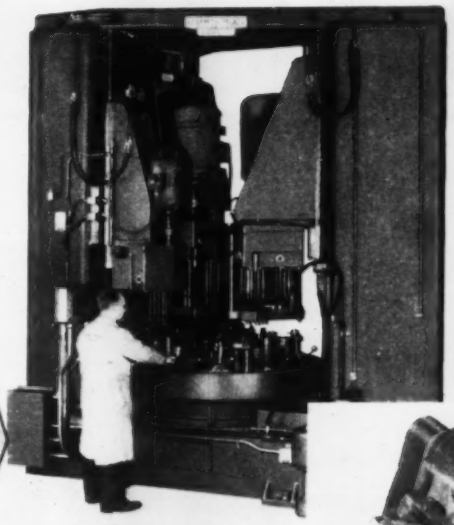
Ford Gets Army Contract

The Army's $23 million Shillelagh surface-to-surface missile development program has been awarded to a Ford Motor Co. subsidiary, Aeronutronic Systems Inc., Los Angeles. Raytheon Mfg. Co., Waltham, Mass., has been awarded a subcontract for development of the fire control subsystem. The Shillelagh program will be initiated in

KEARNEY & TRECKER *builds production*

MACHINE TOOLS FOR EVERY INDUSTRY

Since 1898 . . . Kearney & Trecker Customer Engineering Service — supported by an outstanding staff of engineers experienced in production milling machine design and application — combined with the finest and latest machine tools in an ultra modern plant is always ready to solve your production problems.

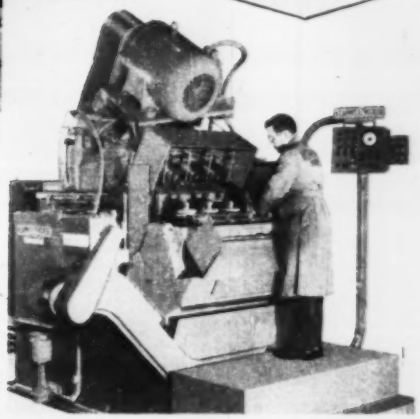


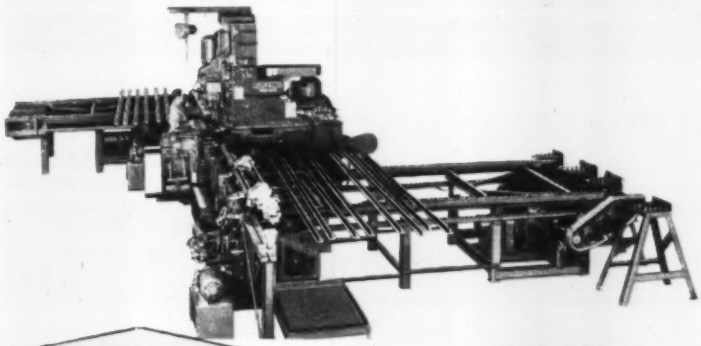
Oil Industry

automatic 4-spindle milling machine mills 4 rock bit cones *simultaneously*... in a trunnion-type fixture having 4 work-piece spindles. PRODUCTION — a constant flow of this expendable type tool to meet the steady demand.

Automotive Industry

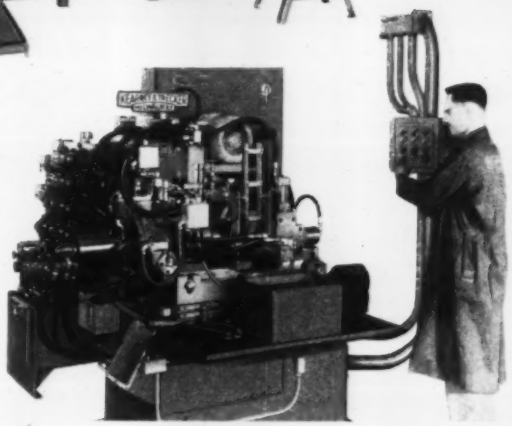
this 88 spindle, 3 vertical head machine performs drilling, chamfering, counterboring, trepanning, spot-facing, reaming and tapping operation on a differention case and cover. PRODUCTION — 67 cases, 67 covers per hour.





Elevator Industry

12 spindle automatic transfer machine mills mating tongue and groove on ends of elevator guide rail-drills mounting holes in rail flanges—for continuous rail mounting. PRODUCTION—28 completely machined rails per hour—180% increase over old method.



Tool Industry

Flutes and shank squares are milled on tap blanks by this automatic machine. Tap blanks are hopper loaded and automatically unloaded. RESULT—greatly increased hourly production.

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Write for bulletin SMD-57 on your company letterhead.

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Special Machinery Division

6790 W. National Avenue • Milwaukee 14, Wisconsin

interchangeable with all standard JIC cylinders

With the introduction of the ALL NEW T-J Squair Head, Tomkins-Johnson now offers industry the most complete design range of air and hydraulic cylinders. Presently available in bore diameters from 1-½ to 8 inches, the T-J Squair Head is an interchangeable cylinder which produces maximum force and efficiency, with minimum pressures . . . and is also adaptable to the use of low pressure oil as the working medium. Write today to The Tomkins-Johnson Co., Jackson, Michigan, for Bulletin #SQ 10-58 and complete details.

CHECK THESE 10 POINTS OF T-J SUPERIORITY

1. One Piece Piston
2. Hard Chrome Cylinder Bore and Piston Rods
3. High Tensile Steel Tie-Rods
4. Cushion Adjusting Screw, Externally Adjustable
5. New Super-Cushion for air, or Self-Aligning Master Seal for oil (T-J Patents)
6. Solid Steel Heads and Mounting Plates Standard all Models
7. Port Design Allows Minimum Pressure Drop on Inlet or Outlet
8. Chevron Type, Self-Adjusting Rod Packing
9. Piloted Packing Gland—Absolute Alignment
10. Piston Rod, Extra Strong—Polished and Chrome Plated for Efficiency and Protection

T-J TOMKINS-JOHNSON
RIVITORS....AIR AND HYDRAULIC CYLINDERS....CUTTERS....CLINCHORS

a 550,000 sq ft plant in Maywood, Calif., under the direction of R. P. Jackson, general manager, Tactical Weapon Systems Div.

Pacific Tube Expands

Pacific Tube Co., Los Angeles, is erecting a 55,000 sq ft building adjacent to its present mill where it will install manufacturing facilities for an expanded product line. Facilities will include barmaking and rod cleaning machines, straighteners, die grinders, saws, and cutoff equipment.

Reynolds Builds in West

Reynolds Aluminum Supply Co. is constructing a new warehouse and office building at 6446 E. Washington Blvd., Los Angeles. The structure will contain 17,000 sq ft of office space and 100,000 sq ft of warehouse space. The new plant is expected to be completed by Nov. 1.

Foundry Installs Furnace

Goslin - Birmingham Mfg. Co., Birmingham, is completing installation of a 22 ton electric furnace at its foundry. Cost: More than $250,000. Purpose: To make heavy steel castings weighing up to 22 tons. John W. Little is president.

AEC Plans Plutonium Plant

The Atomic Energy Commission is negotiating a contract with Kaiser Engineers, Oakland, Calif., for construction of a $145 million plutonium plant which also could serve as a nuclear powerstation. To be built at the Hanford, Wash., plutonium works, it will take about four years to complete.

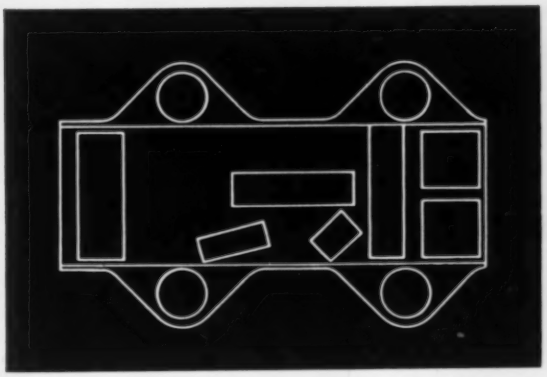
Brush Enlarges Plant

Brush Beryllium Co., Cleveland, has launched an additional expansion of its plant at Elmore, Ohio. The firm recently completed enlargement of alloy rolling facilities there. It is adding 15,000 sq ft to house new beryllium fabrication equipment, including two hot-pressing furnaces and machining facilities. Tentative completion date is June 15.

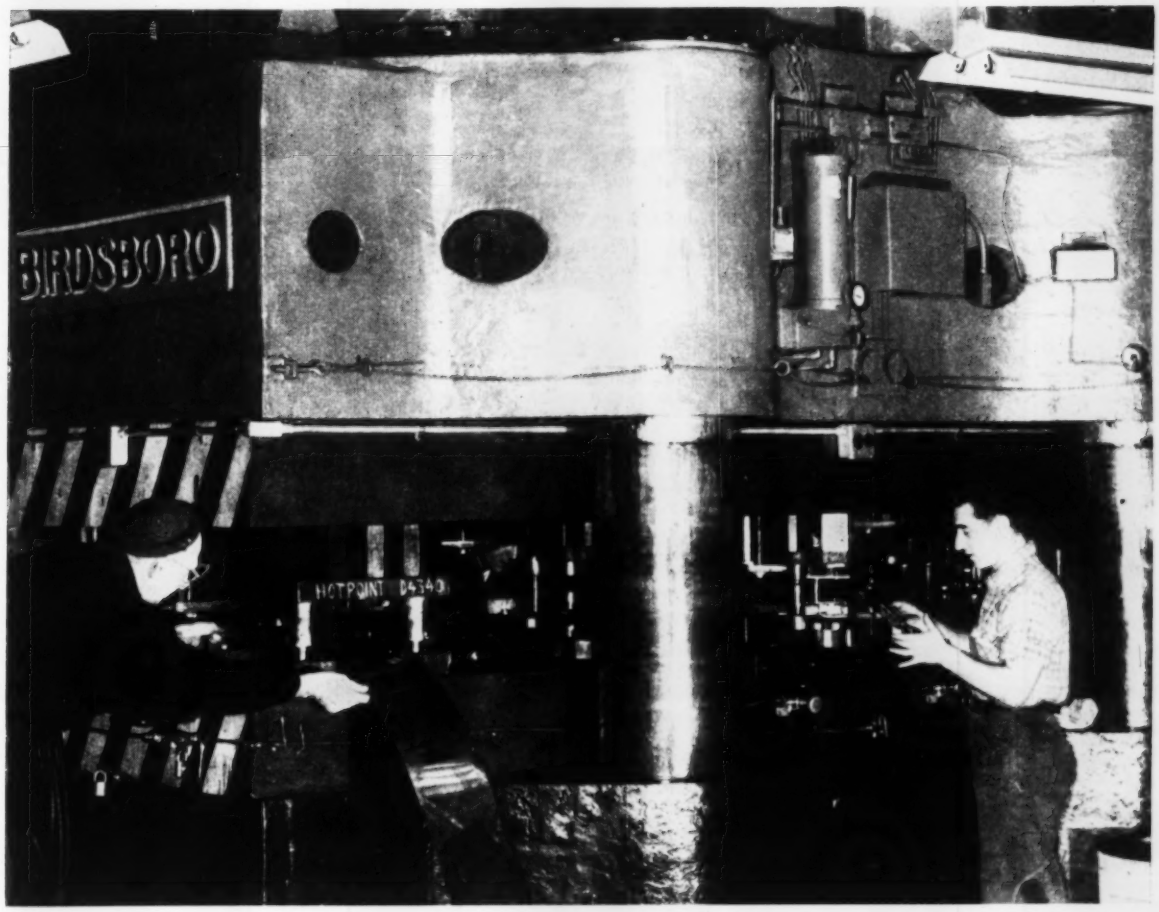
The company is also establishing

BIRDSBORO

Hydraulic Presses are designed for versatility and profitable operation



• This single 2000-ton capacity Birdsboro press can perform blanking, piercing, trimming, and embossing operations at one time on its 60 sq. ft. of die space. This saves handling of parts, cuts labor costs and eliminates the need for individual presses for each operation. BIRDSBORO designs versatility into each press produced. For more detailed information call in your BIRDSBORO representative. *Sales Department*: Reading, Pa., *Engineering Department and Plant*: Birdsboro, Pa., *District Office*: Pittsburgh, Pa.



HP-40-59

BIRDSBORO HYDRAULIC

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STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

US RUBBER **ROYAL V-BELTS**

THE NEW, ALL-NEW U. S. ROYAL V-BELT

NEW *all new* because its cords are treated by an entirely new automation process. Every cord is impregnated with latex in every fiber (not merely surface-coated). Every cord is then built into the belt under tension, with errorproof electronic precision to insure that each will pull its uniform share of the load.

NEW *all new* because the belt is cured by a unique method of molding developed by U. S. Rubber. Consequently there can be no inner or outer imperfections, no harsh bumps. This means smooth-running performance, long belt life.

NEW *all new* because the new covers of new fabrics become a homogeneous blend through new molding techniques. This results in longer belt life by increasing wear resistance.

NEW *all new* because this new method of construction results in strength to spare... a reserve of strength which combined with vibration-free running, results in greater drive efficiency.

NEW *all new* because U. S. Royal V-Belts feature perfect matchability. Born matched, they stay matched.

U.S. Royal V-Belts are in stock at all "U.S." Transmission Distributors. • • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER **Mechanical Goods Division**

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

All these advantages built into the new U. S. ROYAL V-BELT increase H. P.

40%

NO PREMIUM PRICE

The new cords and new fabrics and new construction methods all add up to increasing the H.P. rating of U. S. Royal V-Belts by 40%. These superior improvements mean higher drive capacity at less cost. Using fewer belts and narrower sheaves means less belt cost and less sheave cost. Yet, with all this, you pay no premium for the new U. S. Royal V-Belt!

a beryllium fabrication facility and regional sales office in San Francisco.

J&L Cutting Air Pollution

Koppers Co., Pittsburgh, will construct major equipment for air pollution control at Jones & Laughlin Steel Corp.'s Pittsburgh Works. The No. 4 open hearth shop on the South Side will be equipped with new electrostatic precipitators at a cost of about $9 million.

Voi-Shan Sells Plants

Voi-Shan Industries Inc. (formerly Pheoll Mfg. Co.), Chicago, sold four of its properties: Industrial Fasteners, Chicago; Impact Extrusion, Michigan City, Ind.; Frankfort Mfg. Co., Frankfort, Mich.; and General Mfg. Co., Waterbury, Conn. The new owners have formed Pheoll Mfg. Co. Inc. to operate the plants. Voi-Shan will transfer its headquarters to Los Angeles where it operates several plants.

NEW PLANTS

Kermac Nuclear Fuels Corp. has started production of sulfuric acid at its new plant north of Grants, N. Mex. The $1.5 million plant has a capacity of 400 tons a day and was built by Western-Knapp Engineering Co., San Francisco. It is an integral part of Kermac's uranium mill at Ambrosia Lake.

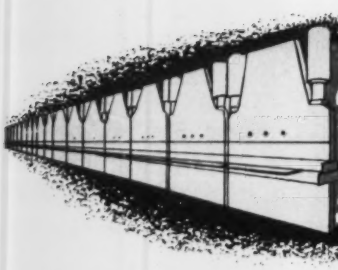
Titan Metal Mfg. Co., Bellefonte, Pa., opened a mill depot at Seymour, Conn. It carries stocks of brass rod products and aluminum forgings.

NEW ADDRESSES

Esbec Barrel Finishing Corp. moved to its new plant at 190 Henry St., Stamford, Conn. The firm makes barrel finishing equipment, media, and compounds. The Esbec Finishing Div. will continue to operate at Meriden, Conn.

Atlas Screw & Specialty Co., New York, moved its Newark, N. J.,

(*Please turn to Page* 80)



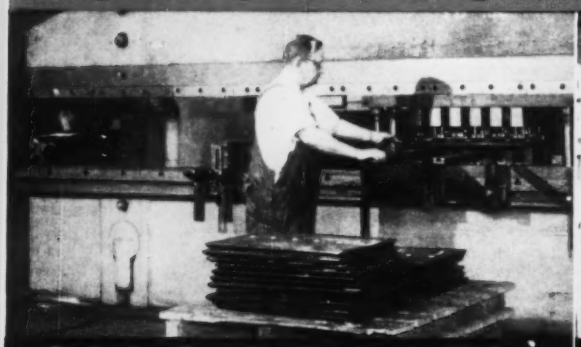
4,769 years to arrive ACCURATE HYDRAULIC

122 out of 124 hydraulic press brakes in U.S. aircraft industry are PACIFIC

Aircraft manufacturers work to the closest tolerances of all industries in metal forming. Douglas Aircraft Company, Tulsa, Oklahoma, with 8 Pacific Brakes (above) is typical of the airframe manufacturers who have selected Pacific for its precise accuracy.

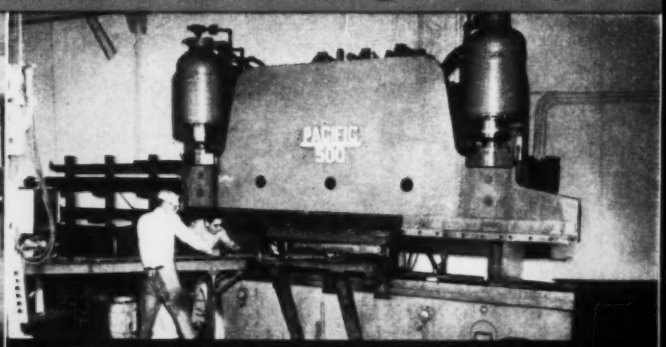
924 PACIFIC Brakes, representing over 95% of all hydraulic press brakes in use today, have operated for an aggregate of 4,769 years to test and confirm PACIFIC designs that have established hydraulic press brakes as far more profitable to operate than mechanical brakes. However, only PACIFIC has precise accuracy, versatility, high speed and dependability that comes from years of experience in manufacturing, developing and improving this unique machine. It is the only hydraulic press brake in daily operation that is actually air bending, straightening, deep drawing, blanking, and doing heavy punching. Accuracy within thousandths of an inch (greater than with any mechanical or other hydraulic brake) repeats itself on every stroke. Ram remains level regardless of location of work on the bed. PACIFIC sizes range from 60 tons to 1500 tons.

PACIFIC HYDRAULIC



Only hydraulic brake built for HEAVY PUNCHING

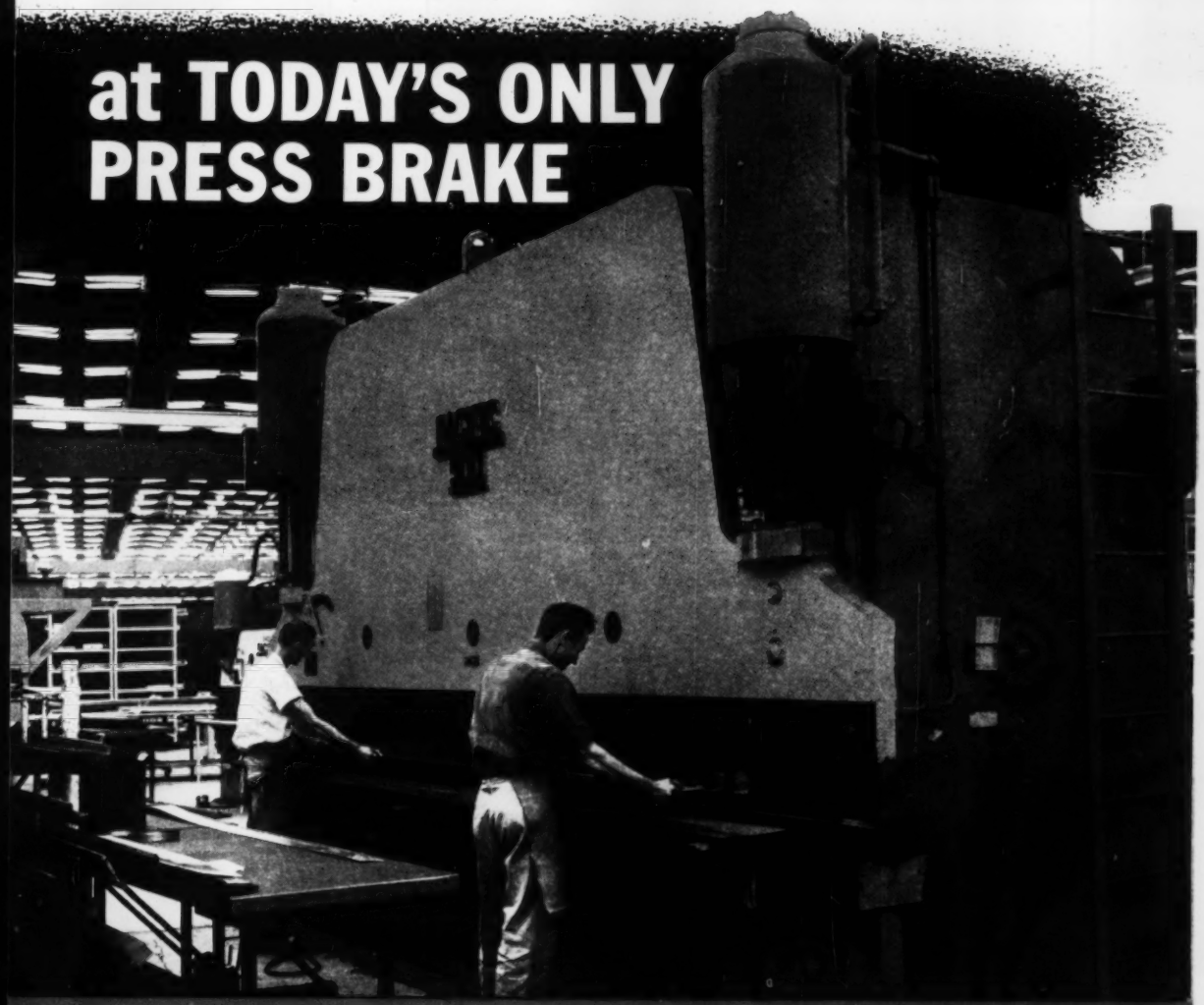
Pacific is uniquely designed to absorb heavy shock from punching in the hydraulic system rather than in the frame of the brake. Cushioned against shock, punch and dies stand up from 3 to 8 times longer than with mechanical brakes. Photo (above) shows 1" alloy steel plate being punched at earthmoving equipment plant.



MAINTENANCE-FREE for years

Dependable, simplified electrical and hydraulic controls can easily be kept working continuously by any plant maintenance crew. There are no complicated electronic devices. In photo (above) at agricultural equipment plant, the 500 ton Pacific Hydraulic Brake shearing ¾" alloy steel plate with Pacific Shearing Attachment has operated continuously for the first 4 years at a cost of $5.22 in replacement parts.

at TODAY'S ONLY PRESS BRAKE



PRESS BRAKE

HIGH SPEED operation

Pacific adjustable stroke length can be shortened for rapid stroking. Automatic, self-leveling ram permits use of progressive dies across entire bed of press. The automatically-fed Pacific at automotive parts plant, which can cycle up to seventy 1½" strokes per minute, is forming 3780 operations per hour in the above photo. In virtually any operation, Pacific's high cycling speed equals or exceeds materials handling capacity.

Write for brochure

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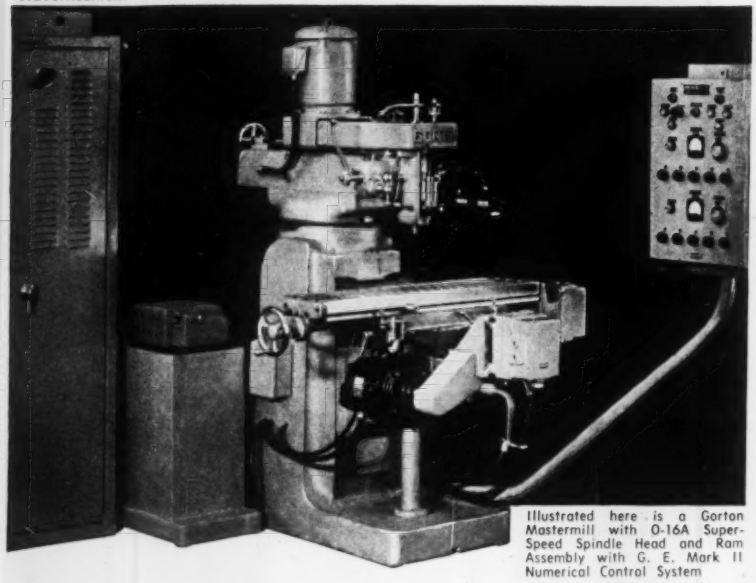
Advertisement



Illustrated here is a Gorton Mastermill with 0-16A Super-Speed Spindle Head and Ram Assembly with G. E. Mark II Numerical Control System

Numerical Control Cuts Short-Run Milling Costs

Requirements of the machining problem determine the type of control

One of the truly fascinating aspects of numerical control is the way in which it changes the "impossible" into the possible . . . usually at a high profit. For instance; remarkable savings have been obtained in the production of "headache" parts, in ability to machine "out of reach" work areas, in maintenance of uniform tolerances on complicated interchangeable components, and in the elimination of waste, rejects, and high inspection costs.

Numerical control is especially suitable wherever design of parts is beyond manual control or multi-tooling capabilities, or where parts are too small to see or too large to comprehend. It is ideal when flexibility is required throughout the entire operation, or when machining requires continuous inspection.

Selecting the right control is the key to profitable operation. The control should be custom-fitted to the machine. This is particularly important in short-run applications because it is here that the greatest economies are obtainable.

The photo above illustrates a Gorton Mastermill Model 1-22 which is "custom-tailored" to numerical control for short runs . . . with built-in transverse and longitudinal table movements and vertical spindle travel. Positioning information increment can be as low as .001 with cycling up to 20 per minute. This machine, if suitable to your requirements, can bring you remarkable production economies.

Further and complete information may be obtained on letterhead request to George Gorton Machine Co., 2005 Racine St., Racine, Wis.

(*Concluded from Page 77*)

branch to 396 Jelliff Ave. Plant superintendent for this distribution center and warehouse is A. Bell.

British Iron & Steel Corp. Ltd. moved its New York office to 37 Wall St., New York 5, N. Y.

CONSOLIDATIONS

Merger of **Woodward Iron Co.**, Birmingham, and **Alabama Pipe Co.**, Anniston, Ala., is being negotiated. Woodward will be the surviving company if the consolidation is ratified by directors and approved by stockholders.

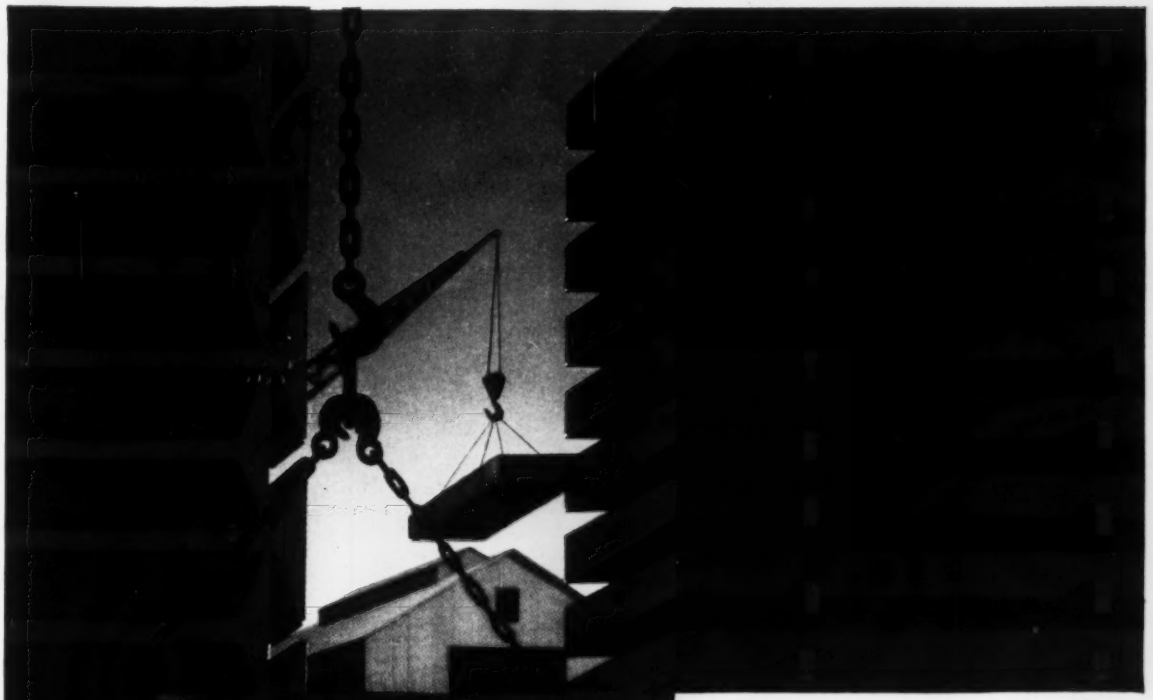
Vermont Tap & Die Co., Lyndonville, Vt., purchased **Pacific Tap Co.**, Burbank, Calif., and will operate it as a division. Vermont Tap is a wholly owned subsidiary of American Saw & Tool Co., Louisville. Principal products of the west coast plant are taps, dies, and associated tools.

Kaiser Aluminum & Chemical Corp., Oakland, Calif., and **Mexico Refractories Co.**, Mexico, Mo., have merged. Mexico Refractories will be operated as a division in conjunction with the Kaiser Chemicals Div. in the production and sale of refractory products for high temperature industrial applications.

Hydrometals Inc., New York, purchased **Midwest Metals Inc.**, a subsidiary of Fluor Corp. Ltd., Los Angeles. Fluor established the company 18 months ago to develop a method of recovering copper powder from copper-bearing scrap, and converting the powder to fabricated copper products. Hydrometals plans to proceed with the construction of a 50 ton-per-day plant.

Adams Machine Co., Chicago, purchased **Wisconsin Grey Iron Foundry Co.**, Milwaukee.

F. C. Russell Co., Columbiana, Ohio, acquired **Weather Wizard Aluminum Mfg. Corp.**, Garden City, N. Y., manufacturer of aluminum windows. B. L. Levinson has been named president and general manager of Russell's new division, Rusco Window Co. of New York.



Plan Your Steel Insurance Now

With steel supply tightening up again and the possibility of a real scarcity in the months to come, it's nice to have your orders for plain and fabricated steel in the hands of a reliable and well-supplied organization.

Steel buyers everywhere know Levinson's reputation for having steel on hand . . . and for "fabrication that fits."

just . . . Leave it to **LEVINSON**

Warehousers, fabricators, designers of steel for over half a century

the **LEVINSON STEEL COMPANY**

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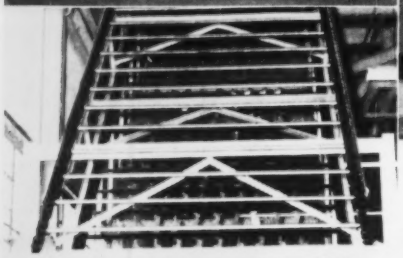
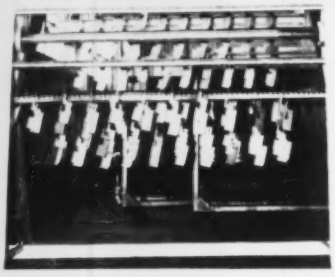
FINISHING SYSTEMS...





The 8 Ft. wide Crossbar Conveyor carries a variety of products and a great mass of small parts through all processing units of the Dip Coating System. The Crossbars in the Conveyor are designed for a work load of 250 lbs.

Complete Mahon Installation Provides Compact Facilities for DIP COATING and SPRAY PAINTING in CUTLER-HAMMER'S Lincoln, Illinois Plant!

In this unique finishing system, the greater part of which is located on the roof, Mahon engineers have employed what is probably the longest continuous crossbar conveyor ever designed into equipment of this type.

The painting enclosure shown above is inside the large electrical plant. This enclosure is divided into two sections, one of which has a paint mixing room on the ground floor and paint Dip Tanks on a mezzanine floor above. The other section houses two Spray Booths and a Batch-Type Finish Baking Oven. The conveyorized, Five-Stage Metal Cleaning and Rust Proofing Machine, Dry-Off Oven, Finish Baking Oven and the Filtered Air Supply Equipment are housed in one enclosure on the roof.

This is the third complete finishing system installed by Mahon in Cutler-Hammer Plants across the country.

If you have a finishing problem, or are contemplating new finishing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which is so important in specially designed equipment of this type.

See Sweet's Plant Engineering File for Information, or Write for Catalogue A-659

THE R. C. MAHON COMPANY • Detroit 34, Michigan

SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO

. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE to YOU!**

MAHON

AIDS SELECTION OF COLD METALS— Mechanical properties of nine aircraft metals at minus 420° F have been evaluated by Battelle Memorial Institute, Columbus, Ohio. It says hardness, elastic modulus, yield, and tensile strengths tend to increase with coldness. Titanium's yield strength-density ratio is much higher—an important factor in making proper metal selections.

BETTER THAN TRANSISTORS— The solion is an electrochemical device that will replace transistors in electronic devices, says the Naval Ordnance Laboratory. Electric current requirements are 100 to 1000 times less than those of transistors. (For more information, send $1.25 for PB 131931, OTS, Department of Commerce, Washington 25, D. C.)

PLATING DONE BY HEAT— A new metal plating process that includes heat treating is said to be an easy way to apply coatings for resistance to corrosion, oxidation, and abrasion. Nickel or cobalt alloys are applied in a paint or paste form, then heated. The developer, Metallurgical Consultants Inc., Maywood, Calif., says the Pyro-Plate process eliminates peeling, chipping, flaking, or lifting, and can be applied to any ferrous metal or copper.

ULTRASONIC MACHINING NOTE— Boron carbide is superior to aluminum oxide or silicon carbide abrasives for ultrasonics machining, claims Norton Co., Worcester, Mass. Faster cutting rates and greater resistance to breakdown are said to more than justify higher cost. Grits from 180 to 800 will produce surface finishes of 30 to 6 microinches rms. Tolerances are often within 0.0002 in.

BOOSTS CUTTER LIFE— Toolholders made of powdered iron impregnated with copper can boost cutting tool life and cutting speeds, says Horace A. Frommelt, director, Metal Removal Center, Spring Garden Institute, Philadelphia. He told the American Society of Tool Engineers: "These holders can increase machinability rates of all materials." The key: Improved damping. Implication is that they may be a natural for relatively brittle ceramic tool bits.

EASIER METAL ANALYSIS— Have you had trouble analyzing high temperature alloys containing titanium, zirconium, tungsten, molybdenum, columbium, or tantalum? The National Bureau of Standards, Washington, has a method which eases the problem considerably. It's outlined in technical report STR-2346.

LEAD LOOKS FOR WINNING COMBINATIONS— Lead mixed with sound deadening fibers improves the effectiveness of insulation, say aircraft designers. The metal also works well when mixed with polyethylene plastics and molded into products like flywheels for tape recorders.

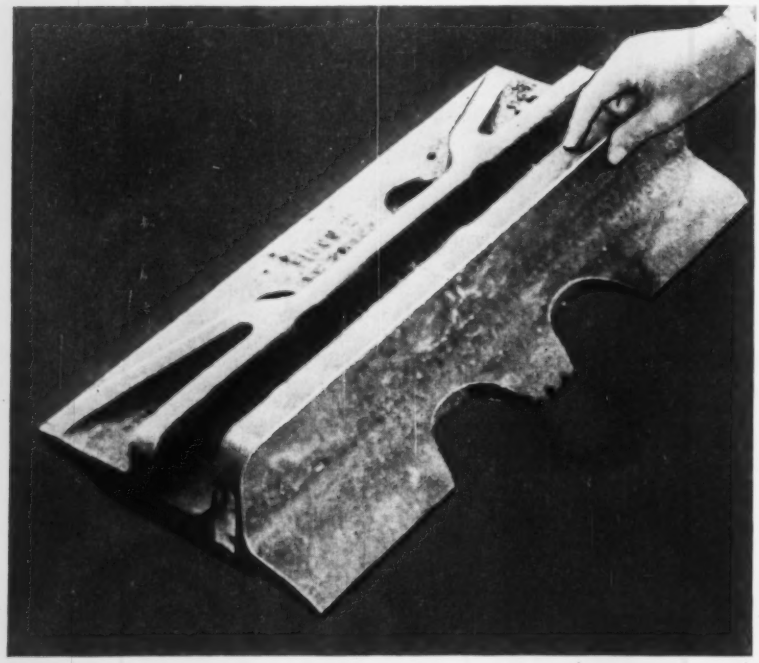
PLASTIC PISTON RINGS— A single ring of Teflon can often replace several cast iron counterparts, suggests Du Pont. A new GM aluminum engine is expected to use this principle (STEEL, Apr. 27, p. 60). Such rings in compressors are said to last 20 times longer than conventional designs and they don't need lubrication.

DOUBLES MAGNESIUM'S HOT STRENGTH— A new alloy of magnesium, didymium, and zirconium (EK31XA) is said to be twice as strong at 500° F as current lightweight alloys. Castalloy Co. Inc., Natick, Mass., told the American Foundry Society last week in Chicago that it is making missile parts of the new alloy.

AMAZING GRAPHITE PROPERTIES— Union Carbide's recent development of flexible graphite cloth has led to further revelations of unusual properties. While normal graphite has a tensile strength about 3000 psi, solid state studies have shown that single crystal filaments resist pulls of 3 million psi. It should lead to much stronger graphite.

This Part Is Hardened with EXPLOSIVES

The results: Brinell is upped 300 points in Hadfield steel. Hardening effects can be controlled to a depth of 2 in. Deformation is minor. Tensile strength is doubled; yield quadrupled



Explosively hardened ridge on tractor grouser plate has worn only 40 per cent as much as unhardened examples. It was put into service last year on a bulldozer at U. S. Steel Corp.'s Fairless Works

MOST ANY working day at Easton, Pa., you can watch a man detonating explosives in a pond back of the plant that employs him.

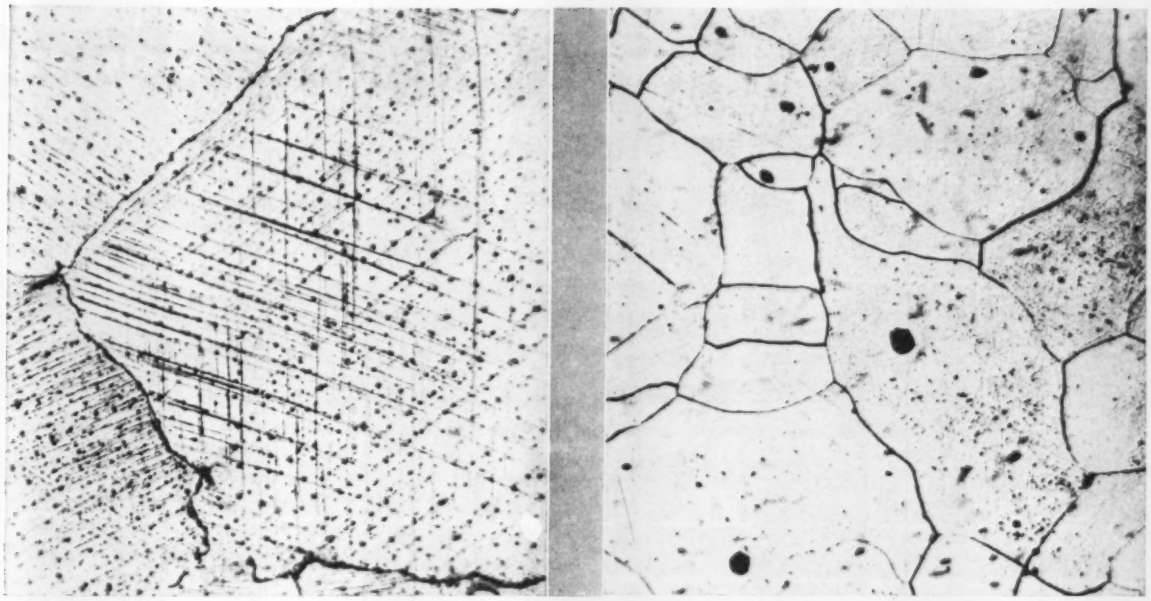
His job: Hardening austenitic manganese (Hadfield) steel parts for the Taylor-Wharton Co., a division of Harsco Corp.

It's the latest development in explosives technology. The method increases the hardness of such parts by 300 Brinell points (up to Rockwell C-55). Tensile strength is doubled; yield is quadrupled.

Other advantages: You can control the degree and depth of hardness, and it's a good test of quality—porosity shows up as dents; cold shuts, tears, flaws, or inclusions usually cause fracturing. And there is little dimensional change.

• The method cold works many hardenable metals, including stainless steel.

About the only prehardening metalworkers have been able to use on Hadfield steels is hammering or shot peening. Hammering is effective, but it takes time and care to produce maximum effect, and deformation is often severe—flanges, for example, can't be touched because of breakage. Norman MacLeod, Altadena, Calif., who invented explosive hardening, points out that shot peening seldom penetrates deeper than 0.050 in., leaving a



X500 X250

Photomicrographs reveal the characteristic three directional deformation lines of work hardened austenitic steel. Compare it with the unhardened example at the right

severely hardened skin on a soft core. That causes spalling under severe, continuous loading.

Explosive hardening is noticeable 2 in. below the surface. The effects are uniformly distributed.

• The method requires care but is easy to use.

E. I. du Pont de Nemours & Co., Wilmington, Del., owns the MacLeod patent rights. It has developed an easy-to-use sheet explosive called EL 560-A. With proper precautions, it is comparatively safe and can be detonated in some industrial areas if you submerge the parts in water.

Areas to be hardened are carefully outlined and coated with a resin adhesive (Du Pont recommends only three kinds). The explosive sheet, which handles much like linoleum, is cut to fit the scribed areas and carefully attached with additional adhesive (a close fit is needed to eliminate air pockets). The explosive is detonated electrically with a high powered blasting cap.

How much explosive you use affects degree and depth of hardness. Several layers can be used to increase the impact. Assuming you're using a flat surface, the more explosive the harder and deeper are the effects.

• Four firms, including Du Pont, are doing such work.

Besides Taylor-Wharton, the Manganese Steel Forge Co., Philadelphia, and the American Manganese Steel Div., American Brake Shoe Co., Chicago Heights, Ill., are in production. It is limited mostly to railroad, construction, and mining equipment, but there are a number of machine applications.

• The future shows great possibilities for such work in foundries and in maintenance repairs.

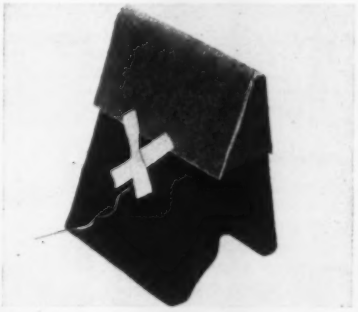
Explosive hardening ought to be ideal in field applications, says Du Pont. Although the process makes a lot of noise in the open, contractors can minimize it by covering with earth, or putting the work into a shallow hole filled with water.

Explosives require judicious handling, but the rules are well established and easy to follow. The process is by no means rough or crude. A little care will easily demonstrate its precision.

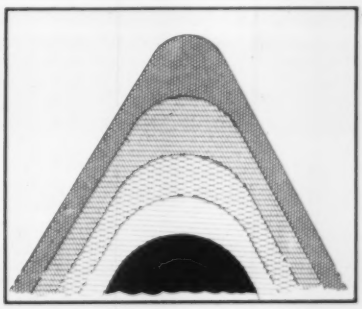
Du Pont says ordinary explosives simply won't work. EL 506-A was developed for this application.

Du Pont has a complete explosive hardening setup at its Potomac River Works, Falling Waters, Va. It does production work and feasibility studies for interested firms.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

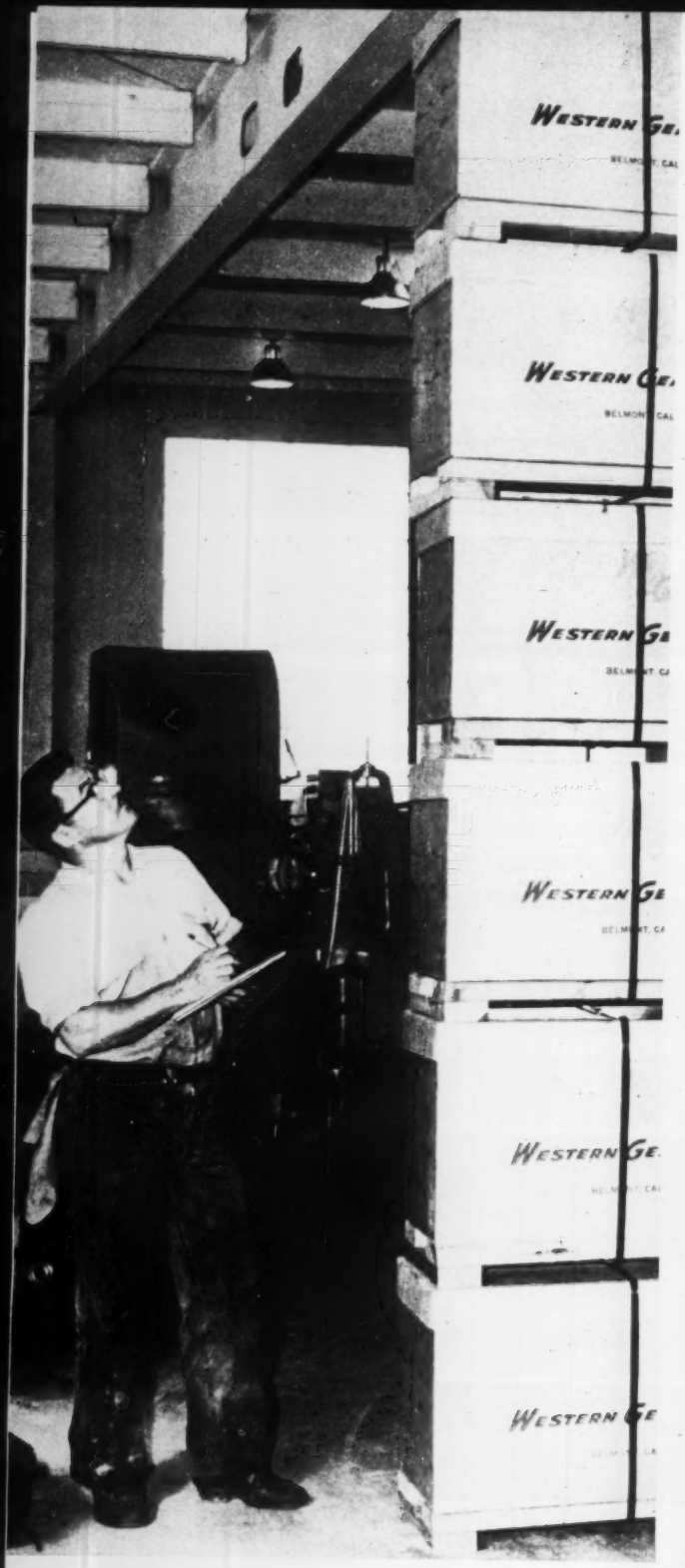


Dipper tooth illustrates how explosive sheet is cut and glued to harden the working edge



Shaded areas show how hardness varies. In Hadfield steel, Rockwell 55 can diminish to Rc 20 two in. down

Corrugated Boxes



Western Gear Corp., Belmont, Calif., stacks packaged gear motors (weighing up to 400 lb each) six high without damage to the bottom box. The crates it formerly used could be stacked only three or four high. Customers like the ease of handling with the new corrugated package and appreciate receiving the motors free of dust and dirt

IF packaging costs are taking too much of a bite out of your profits, take a look at the economies some manufacturers are realizing by shipping heavy parts in corrugated boxes.

Cost reductions of 50 per cent or more and decreases in shipping weights of 30 lb are common. Manufactured parts arrive at their destination undamaged, free of dust and dirt, and ready for use.

Special container designs allow manufacturers to ship many parts in a single package. O. A. Sutton Corp., Wichita, Kans., ships 72 fractional horsepower motors in a two-tier palletized container. The unit consists of two boxes with partitions, each holding 36 motors. When strapped to an expendable wooden pallet, the complete package weighs about 900 lb.

Packaging operations have been simplified because the packers can take the motors from the production line and place them directly into the container. Customers appreciate the convenience of receiving them in a way that requires no unwrapping.

Sutton's special package was designed by Gaylord Container Corp., a division of Crown Zellerbach Corp., St. Louis. Here are other examples of satisfied customers from the Gaylord file:

• Packages can be designed to facilitate feeding parts into a production line.

Such is the case for the corrugated bulk container used by White-Rodgers Electric Co., St. Louis. Holding 1200 lb of controls for home laundry dryer units, it consists of six separate containers. Four of the boxes hold 216 automatic pilots each, and two hold 432 solenoid gas valves each. The complete container holds controls for 864 dryers.

When the package reaches the customer, the smaller boxes containing the automatic pilots are put on a conveyor line. The larger boxes which hold the valves are placed beside the assembly line where the

Cut Cost of Shipping Heavy Loads

operators can work from them.

White-Rodgers says the time saved by the use of the bulk pack, compared with individual cartons, is about 400 minutes per 1000 controls. This represents a time savings of about 65 per cent.

Packaging procedure is to place the two containers filled with valves on an expendable wooden pallet and place a cap over them. The four boxes containing pilots are then placed on the cap and covered with a top cap. The six containers are strapped to the wooden pallet.

• Corrugated boxes have good stackability.

Western Gear Corp., Belmont, Calif., packages and ships gear motors weighing up to 400 lb on corrugated containers. In the warehouse, prior to shipment, the company stacks the boxes six high, gaining valuable space—the crates it formerly used could be stacked only three or four high.

With its old method of packaging, Western Gear had about 5 per cent damage in shipment. Since the new container has been used (about a year), no damage has been reported.

The firm's customers have expressed approval of the new package. They like the ease of handling and appreciate receiving the motors free of dust and dirt that used to accumulate during shipment.

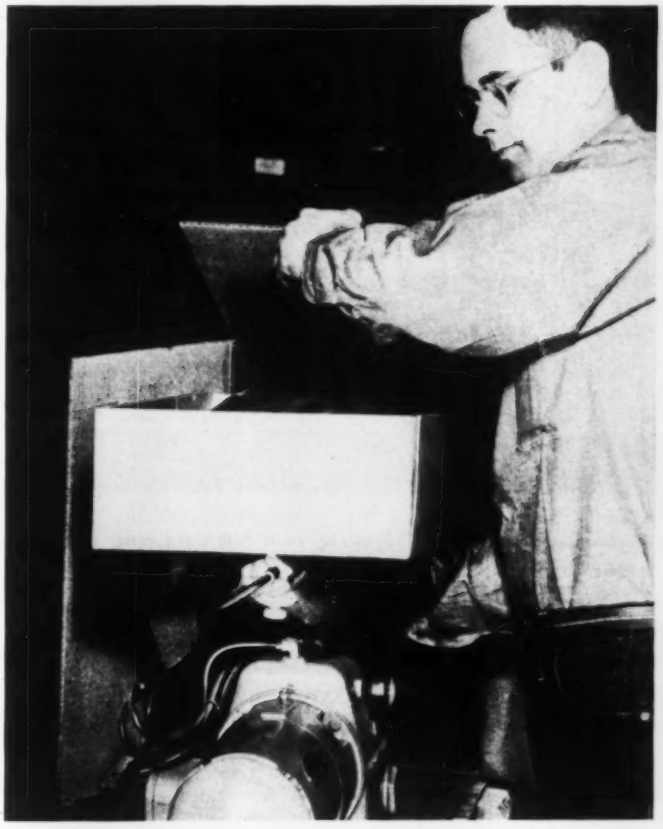
The first step in packaging the gear motors is to stitch corrugated corner posts into each corner of the box. Then the container is placed on a wooden skid. After the motor has been lowered into the box, it is fastened to the skid with lag screws. A corrugated lid is placed in position, and the package is secured with steel strapping.

• Corrugated containers cut costs five ways.

Wisconsin Motor Corp., Milwaukee, has adopted a corrugated shipping container for its line of air-cooled gasoline engines. Previously, engines which weigh 300 to 500 lb were shipped in nailed wooden crates. Advantages of the new container:

1. Container costs have been reduced by the elimination of carpentry needed to make and assemble wooden crates. 2. Tare weight has been reduced about 30 lb on each unit shipped. 3. Time required to assemble the containers and package the engines has been reduced by about 27 manhours per day. 4. The new containers are stored next to the packaging line; handling of lumber from freight cars to the carpentry shop has been eliminated. This also makes inventory control easier and reduces the likelihood of running out of packaging materials. 5. Storage area taken up by the empty knock-down boxes is much less than needed to store wood.

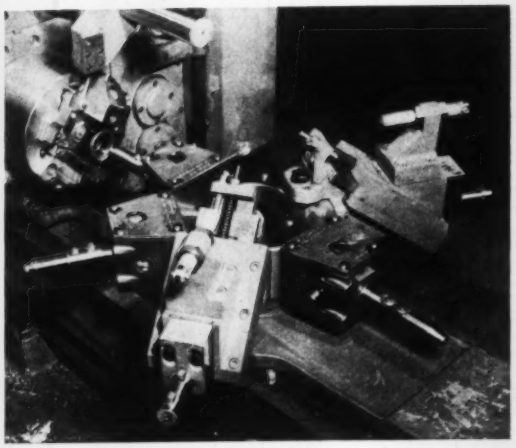
The new package consists of a corrugated superstructure (hood) which slips over the engine on a wooden skid. The container is attached to the skid with strapping.



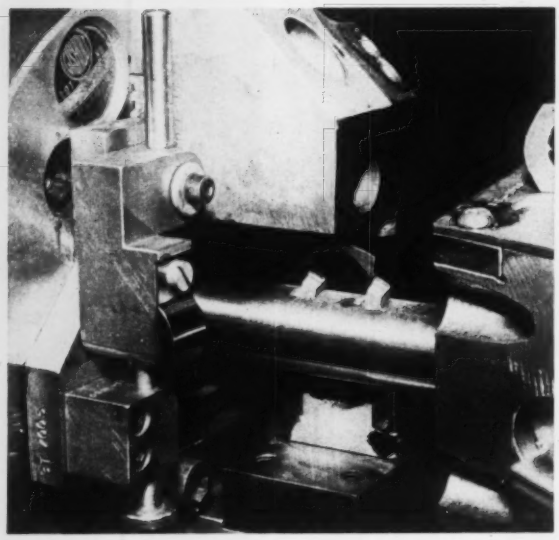
At St. Louis, Fairbanks, Morse & Co. uses a special corrugated package to ship water pumps with capacities up to 42 gallons. The pumps are first bolted to a solid fiber base. Then a sheet of specially treated paper is placed over the tank top to avoid marring the paint. The paper is held in place by a die-cut sunburst opening which is part of the top lid. A small box containing parts is wired to the lid before it is positioned. Final step is to slip the prepackaged pump assembly into a shipping container and staple it closed

Custom Setup Trims Machining Costs

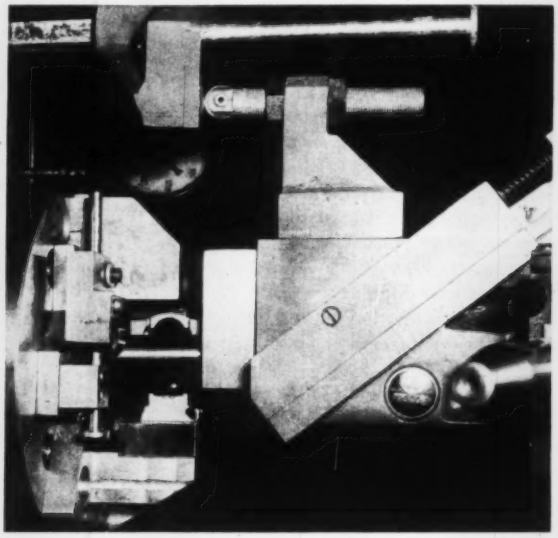
Two new lathes replaced four old ones. Hydraulic drives give both new machines automatic cycles. The result: One operator does the whole job



This hex turret tooling setup has helped cut the machining cost on cast iron parts. At the same time, part quality has been boosted



A boring bar that is piloted in a chuck bushing machines the front and back bores. Drooping as it enters the part, it is raised into line as its taper enters the bushing. Run-out between the bores is held within 0.0015 in.



Slide tools do the rough and finish straddle-facing, front and back, and chamfer the back ID. When it's fed forward, a roller on the movable part of the tool rides up a dead stop bracket on an overhead bar, raising the cutters

HYDRAULIC drives and optimum tooling were teamed up to cut machining time an average of 50 per cent on eight different parts at Bodine Electric Co., Chicago. Production is more than 80,000 parts annually.

Two Gisholt No. 3 ram type turret lathes are turning up the savings on cast iron worm gear housings. Both have hydraulic drives to control all machine functions, including speed and feed selection, reverse feed, stop and reverse of the spindle, and complete turret ram operation and indexing.

The hydraulic drive converts the hand operated turret lathe into an automatic chucking lathe. The aumatic cycle lets the operator handle a second machine. Since the cycle provides correct feeds and speeds on all operations, Bodine production men have found they are getting longer tool life and more uniform part quality.

• **How It's Done**—The new setup on the housing (illustrated above) trimmed 65 per cent from boring and facing time alone. The part is placed on a stationary base on the chuck. It's centered by a V-block on the moving jaw. The part is positioned against the back face by a swinging locator, mounted on the chucking fixture. The swinging stop gives an accurate length location and can be moved out of the way by hand, to provide clearance for the tools.

During the automatic cycle, hexagon turret tools rough and finish bore, straddle-face and chamfer at the front and back, and bore a relief between the bores. Special tools assure parallelism and concentricity between the front and rear surfaces.

New Oscillating Tool Block Triples Production Speed

An oscillating tool block developed by Kennametal Inc., Latrobe, Pa., permits two way planing with a conventional planer. It has tripled the speed of planing stepped edges on steel plates prior to welding.

The stepped form is cut during the forward stroke and chamfered on the return stroke. The block automatically turns 13 degrees and feeds the tools inward each time the table reverses.

• **Major Advantages** — Machining time on 5 ft steel plates (SAE 1020) was cut from 15 to 5 minutes. Tool life was increased from 24 pieces per grind with high speed steel tools to 33 pieces per cutting edge with throwaway carbide inserts. The gains were based on two way planing and a changeover to tungsten titanium carbide inserts (Kennametal's K21).

Cutting speed was increased from 75-90 to 250-300 fpm. Average feed was changed from 0.025 to 0.028 in. per table cycle. Replacing cutting edges now takes only a few seconds.

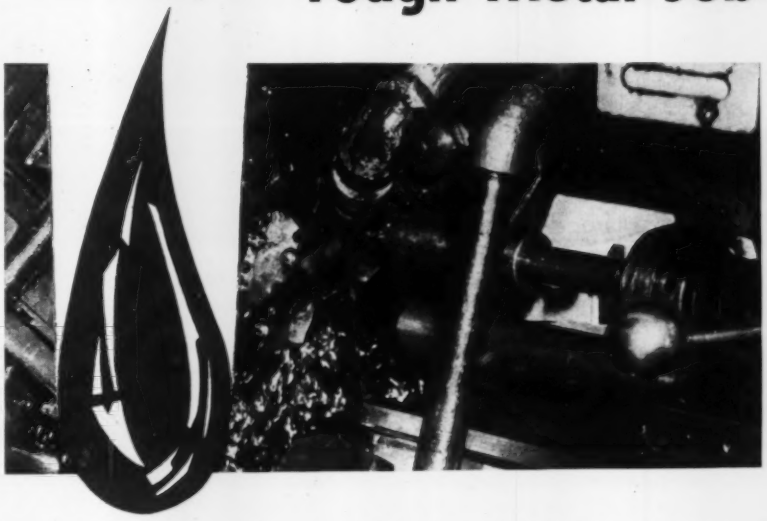
• **The Setup** — Each block uses three Kendex inserts. A ¾ in. square insert and a ½ in. triangular insert are clamped to the forward faces. A ¾ in. square insert is clamped on the rear faces at a 42 degree angle for chamfering.

The 48 x 48 in. planer carries four to eight steel plates (clamped in two rows) on its 16 ft table. The plates are 3 or 5 ft long, about 8 in. wide, and ¾ in. thick. Tools are subjected to one, two, or three interruptions in each cut. Outside edges of the two rows of plates are machined simultaneously by tools on two oscillating tool blocks.

An air passage and a hose connection on the tool block prevent top facing bits from being broken on return strokes by the wedging action of chips dragging under the tool blocks.

The new tool block is in use at the Decatur, Ill., plant of Caterpillar Tractor Co., East Peoria, Ill.

Special Cutting Fluid Solves Tough Metal Job



Tailored for cutting heat resistant alloys, it multiplies tool life and maintains production rates. A bonus: Scrap rates drop from 15 to less than 1 per cent

HOW can you meet production goals and still get economical tool life when you machine high strength, thermal resistant steels? More and more metalworking companies will face the problem as we move into the Space Age.

One way out, and it's often used, is to reduce machining speeds. But the approach always results in sacrifices in production economy. Here's a better way: Some production analysis at High Production Machine Co., New Britain, Conn., showed that a change in cutting fluids would alleviate a tough cutting problem.

• **Case History**—The job involved a nickel base alloy similar in machining properties to Inconel or Hastelloy. It contained Cr 19.5, Co 13.5, Mo 8, Ti 2.5, and Al 1.2. Machining operations on a New Britain six-spindle automatic involved carbide forming and turning, facing, drilling, reaming, and cutoff.

The drills proved to be the critical tools. With a conventional sulfurized cutting oil, drills produced only six parts a grind. The time cycle on the job was 28 seconds, but it had to be lengthened if drill life was to be made economical.

After study, a special cutting fluid, Vantrol 5495-G, produced by Van Straaten Chemical Co., Chicago, was tried at the same speeds and feeds that had been used.

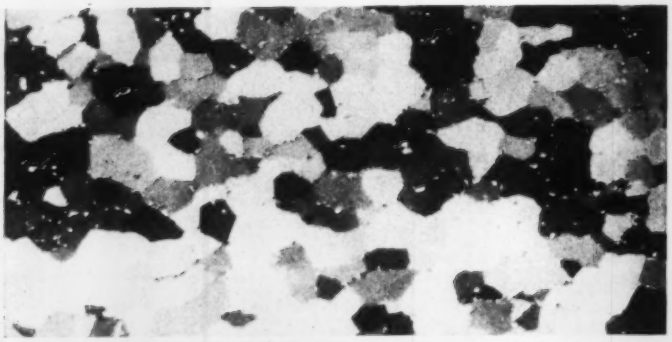
• **Results**—In addition to maintaining the short cycle time and solving the drill life problem, a close check on all other tools showed across-the-board improvements. Drill life jumped from six to 400 pieces. The form tools that used to turn out a maximum of 90 parts a grind, now last through 350 parts.

Cutoff tool life jumped from ten to 125 parts. The turning cutter's life was about 60 parts; it's now 400.

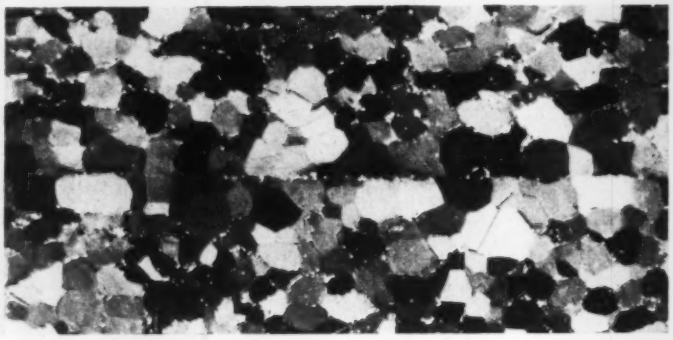
The secret of the fluid is in its closely controlled compounding of additives. Chemical activity is balanced, and strong polar lubrication gives better wetting on the cutters. More efficient cutting cropped scrap rates from 15 to 1 per cent.

Abrasive Belt Grinding Upgrades Metal Bonds

Zirconium alloy samples, after belt grinding and gas bonding, show complete grain growth at the bond interface . . .



Samples prepared for bonding by another means show incomplete grain growth and contamination; bond line is sharply defined.



HOW TO get the best results in metal bonding: See that surfaces are prepared properly.

For example, zirconium sheets used in making elements for atomic reactors, must have flat, uncontaminated surfaces for satisfactory gas bonding. Belt surface grinding produced highly satisfactory bonding surfaces in tests by Dr. Hugh N. Dyer and R. A. Leggett, Product Engineering Dept., Behr-Manning Co., Troy, N. Y., a division of Norton Co.

Best results were obtained with grit 60 silicon-carbide belts, run at 1500 to 3000 fpm, using sulfur chlorinated oil as a grinding fluid.

• Because deformation is less than in roll or extrusion cladding, proper surface preparation is essential.

Reactor grade, Zircaloy 2 sheets are surface finished, degreased, detergent washed, rinsed, and placed in a sealed, evacuated, protective chamber. The container is then subjected to high pressure and temperature in a helium atmosphere. High pressure brings mating surfaces into intimate contact; they're bonded by diffusion and grain growth across the interface.

Needed for good bonding: Uniform, reproducible, uncontaminated surface roughness, 80 microinches or greater. It's produced most economically, the engineers say, by coated abrasive belt grinding, if the process is carefully controlled. A clean, new surface must be exposed. But the amount of metal removed isn't critical.

Pickled or grit blasted surfaces are contaminated, and don't bond well. Grain growth is poor across the bond between cold-rolled surfaces.

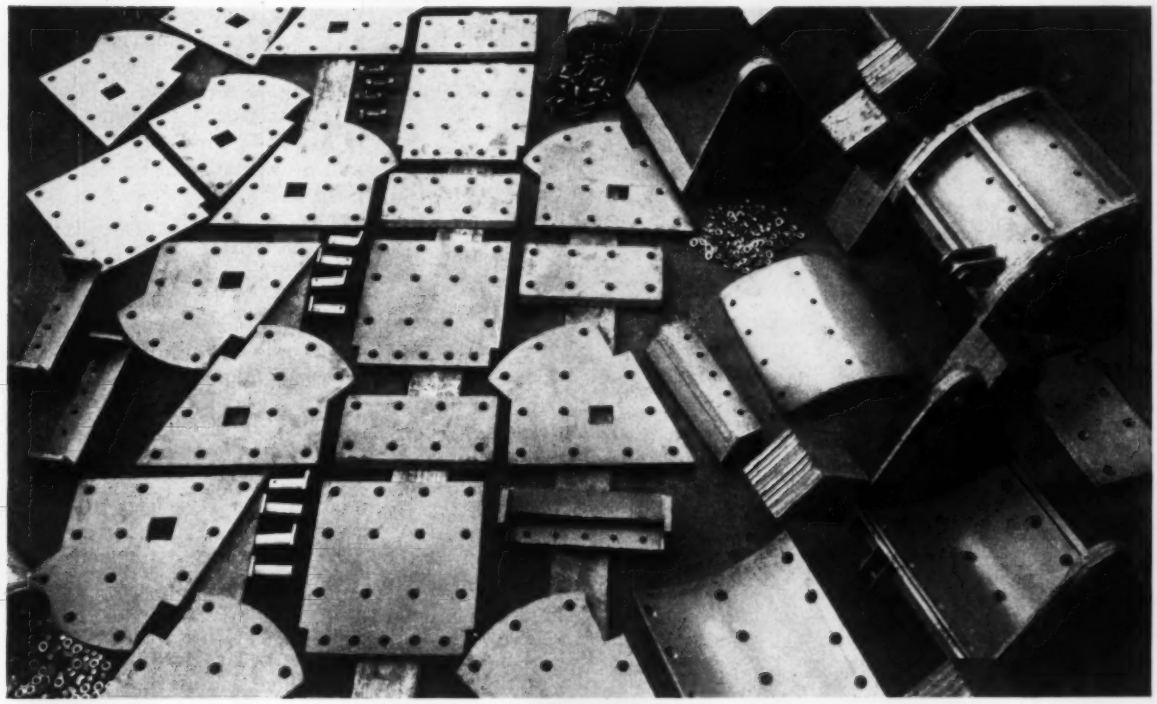
• Tests determined the most effective belt speed, abrasive, and grinding fluid; they also showed how much metal should be removed.

Small plates of reactor grade, hot and cold rolled Zircaloy 2 were fed through a belt surface grinder at 4 fpm, removing 0.001 to 0.005 in. of material. Belt speed: 1100 to 5500 fpm.

Some belts were coated with aluminum oxide, others with silicon carbide. Two cutting fluids (heavy, sulfur chlorinated cutting oil and tap water) were used.

Prepared samples were gas bonded in an autoclave—5 hours at 1550° F, 10,000 psi. Bonds were evaluated metallographically by D. C. Carmichael, Battelle Memorial Institute, Columbus, Ohio. Bond line contamination wasn't detected, and grain growth across the interface was complete.

In a peel test, bonds couldn't be separated by a chisel, which was driven into a notch at the interface; they withstood a corrosion test in steam at 750° F.



We work with the stubbornest steel in the world—and we like it

We know our problems in rolling, forging, pressing and drawing Rol-Man (11 to 14%) manganese steel.

But we know that the trouble we have working Rol-Man is pretty good evidence of the extra service you'll get in your Rol-Man wear parts.

And the work we do with Rol-Man—the rolling and the forging—produces a fine, uniform grain. It's a pretty wonderful steel when it leaves our shop.

But then it gets better. Rol-Man work hardens better than any other steel. It actually responds individually to different kinds of impact. Heavy impact . . . deep hardening. Light impact . . . shallow hardening. In every case, the core remains soft and ductile. And, as you wear through one hardened layer, another develops.

You *can* wear out our Rol-Man manganese steel . . . but it'll be fighting every thousandth of the way.

If you've got the idea that we respect and admire this stubborn steel, you're right. After 37 years of making this steel our one job, we've learned how to handle it. But even with us it's no pushover.

Right now Rol-Man steel is digging ore, crushing rock, screening coke, mixing asphalt, lining blast furnaces, dredging rivers, driving locomotives, and a few thousand other things.

If you've got any tough jobs that demand a long-wearing steel, we'd like to show you what Rol-Man can do for you. Just send us a sketch of the part and tell us what it's supposed to do. We'll quote on any quantity. And deliver your Rol-Man parts ready for installation.

MANGANESE STEEL FORGE CO.

Richmond Street and Castor Avenue, Philadelphia 34, Pa.

ROL-MAN®

THE WEAR-HARDENING STEEL

Card Control Catches on At Automated Hot Mills

Four, for example, installed Westinghouse's Prodac last year. Three more installations, here and abroad, are slated for this year. The system provides automatic rolling and sequencing in handling slabs and ingots, reading and executing instructions from punched cards. It's flexible. Each system, made up of modules, or sections, can be tailored to the job. So far, it has been used for rolling steel and aluminum, but you can expect to see its range of applications grow.

LOOK FOR the trend toward card programming of hot rolling mills to become more firmly established.

Last year, for example, four reversing hot mills began operation under guidance of automatic control systems developed by Westinghouse Electric Corp., Pittsburgh, T. R. Lawson, manager of the industrial control department, reports. He says three other installations are slated for early this year.

• Card control makes for easier rolling of slabs or ingots. Flexibility assures other applications.

A small, punch-printed card is fed into the Prodac system. The operator then presses a button to start automatic rolling. The mill processes the hot slab or ingot, putting it through many rolling and sizing operations to produce the required shape or size.

The modular approach, used in designing Prodac, is being applied to systems for related processes.

Basic Prodac modules, or building blocks, are being used in stock house programming setups and for data storage on tin plate and recoil lines. They're also being used to operate machine tools.

• Most installations are in steel mills. One's used in an aluminum slabbing mill.

In January, 1958, Westinghouse automatic controls began operating a reversing roughing mill at the Aliquippa (Pa.) Works of Jones & Laughlin Steel Corp. They provide automatic sequencing.

Shortly afterward, Prodac was put into operation at Empire Reeves Steel Corp., Mansfield, Ohio.

Later in the year, one of the systems began operating at the Davenport (Iowa) Works of Aluminum Co. of America. Besides controlling screwdown opening and mill speed, it identifies alloy number, ingot size, pass number, and rolled width of the material in process. It also indicates how the slab is to be lengthened or widened as it's rolled on either axis.

A system installed at South Works, United States Steel Corp., Chicago, provides automatic control and sequencing for a 54 in. high lift blooming mill.

• More will go into operation this year—here and overseas.

Two of the systems will be installed by United States Steel Corp. One, with automatic sequencing, will control a 46 by 90 in. universal slabbing mill at Gary Works; another will control a scale model reversing hot mill in the research laboratories at Monroeville, Pa.

Prodac will provide automatic sequencing and control for a 68 in. reversing roughing mill at Nippon Kokan K. K., Tokyo, Japan. It's to go into operation early this year.

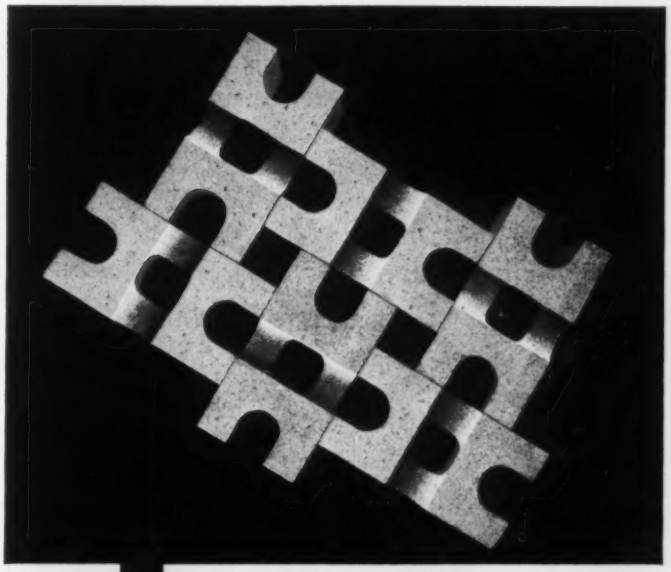
Mills Using Prodac

MILL		CARD CONTROLLED	
Jones & Laughlin Steel Corp. Aliquippa, Pa	44 in., hot-strip reversing rougher	9 passes Automatic sequencing	Screwdown, edger, mill speed, draft compensation, descaling spray, side guides, scale breaking edger
Empire Reeves Steel Corp. Mansfield, Ohio	52 in., hot-strip reversing rougher	9 passes	Screwdown
United States Steel Corp. South Works Chicago, Ill.	54 in., high lift bloomer	29 passes Automatic sequencing	Screwdown, manipulators, turning fingers, entry speeds, acceleration, tandem rolling
Aluminum Co. of America Davenport, Iowa	160 in., 4 high slabber	29 passes	Screwdown, mill speeds, schedule identification
U. S. Steel Gary, Ind.	46 by 90 in. universal slabber	29 passes Automatic sequencing	Screwdown, edger, manipulators, turning fingers, draft compensation, entry speeds, maximum speed, acceleration, tandem rolling
U. S. Steel Research Laboratories Monroeville, Pa.	Reversing hot mill	12 passes	Screwdown
Nippon Kokan K. K. Tokyo, Japan	68 in., hot-strip mill reversing rougher	9 passes Automatic sequencing	Screwdown, edger, mill speed, draft compensation

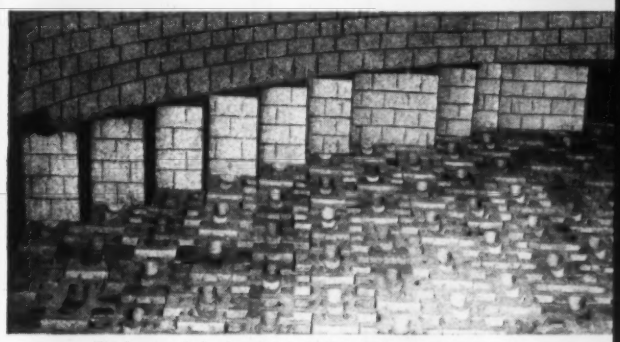
New design provides

25% to 50% GREATER HEATING SURFACE

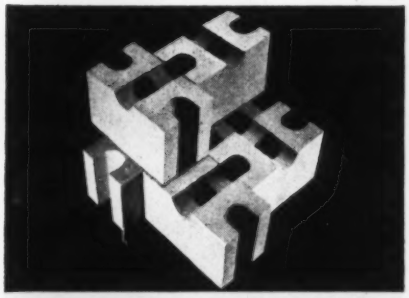
than ordinary basket weave checkers



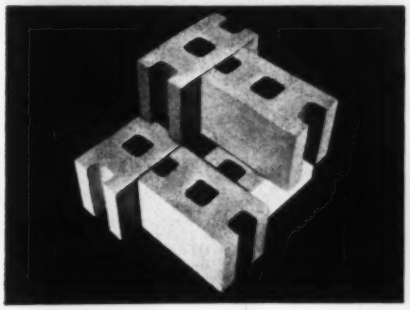
KENNEDY BLAST FURNACE STOVE CHECKERS



Tendency of checkers to twist in service is overcome by pilaster wall construction of the Bailey Hot Blast Stove.



The regular Kennedy Checker (above) is of 3-hole design with unobstructed flue openings, 1¼" minimum wall thickness and a cross flue. It also can be furnished (below) without the cross flue feature.



This new 3-hole checker shape is laid in basket weave style to produce a solid 1¼" wall between each flue. This assures greatly increased heating surface without sacrificing the advantages of basket weave design.

The increased heating surface of the Kennedy Checker results in a correspondingly lower stack temperature. This makes possible the use of a modern steel bottom for supporting the checker system.

Write for Bulletin

WILLIAM M. **Bailey** COMPANY

ENGINEERS

LEADERSHIP THROUGH QUALITY

1221 BANKSVILLE ROAD PITTSBURGH 16, PA

Card Control Catches on At Automated Hot Mills

Four, for example, installed Westinghouse's Prodac last year. Three more installations, here and abroad, are slated for this year. The system provides automatic rolling and sequencing in handling slabs and ingots, reading and executing instructions from punched cards. It's flexible. Each system, made up of modules, or sections, can be tailored to the job. So far, it has been used for rolling steel and aluminum, but you can expect to see its range of applications grow.

LOOK FOR the trend toward card programming of hot rolling mills to become more firmly established.

Last year, for example, four reversing hot mills began operation under guidance of automatic control systems developed by Westinghouse Electric Corp., Pittsburgh, T. R. Lawson, manager of the industrial control department, reports. He says three other installations are slated for early this year.

• Card control makes for easier rolling of slabs or ingots. Flexibility assures other applications.

A small, punch-printed card is fed into the Prodac system. The operator then presses a button to start automatic rolling. The mill processes the hot slab or ingot, putting it through many rolling and sizing operations to produce the required shape or size.

The modular approach, used in designing Prodac, is being applied to systems for related processes.

Basic Prodac modules, or building blocks, are being used in stock house programming setups and for data storage on tin plate and recoil lines. They're also being used to operate machine tools.

• Most installations are in steel mills. One's used in an aluminum slabbing mill.

In January, 1958, Westinghouse automatic controls began operating a reversing roughing mill at the Aliquippa (Pa.) Works of Jones & Laughlin Steel Corp. They provide automatic sequencing.

Shortly afterward, Prodac was put into operation at Empire Reeves Steel Corp., Mansfield, Ohio.

Later in the year, one of the systems began operating at the Davenport (Iowa) Works of Aluminum Co. of America. Besides controlling screwdown opening and mill speed, it identifies alloy number, ingot size, pass number, and rolled width of the material in process. It also indicates how the slab is to be lengthened or widened as it's rolled on either axis.

A system installed at South Works, United States Steel Corp., Chicago, provides automatic control and sequencing for a 54 in. high lift blooming mill.

• More will go into operation this year—here and overseas.

Two of the systems will be installed by United States Steel Corp. One, with automatic sequencing, will control a 46 by 90 in. universal slabbing mill at Gary Works; another will control a scale model reversing hot mill in the research laboratories at Monroeville, Pa.

Prodac will provide automatic sequencing and control for a 68 in. reversing roughing mill at Nippon Kokan K. K., Tokyo, Japan. It's to go into operation early this year.

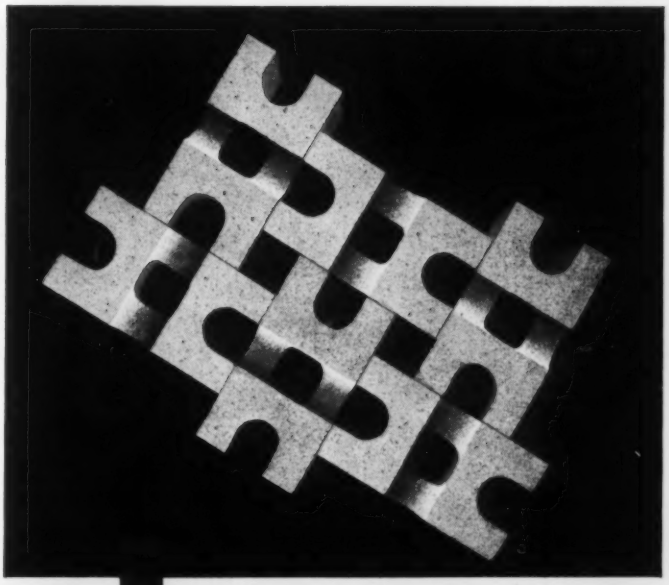
Mills Using Prodac

MILL		CARD CONTROLLED	
Jones & Laughlin Steel Corp. Aliquippa, Pa	44 in., hot-strip reversing rougher	9 passes Automatic sequencing	Screwdown, edger, mill speed, draft compensation, descaling spray, side guides, scale breaking edger
Empire Reeves Steel Corp. Mansfield, Ohio	52 in., hot-strip reversing rougher	9 passes	Screwdown
United States Steel Corp. South Works Chicago, Ill.	54 in., high lift bloomer	29 passes Automatic sequencing	Screwdown, manipulators, turning fingers, entry speeds, acceleration, tandem rolling
Aluminum Co. of America Davenport, Iowa	160 in., 4 high slabber	29 passes	Screwdown, mill speeds, schedule identification
U. S. Steel Gary, Ind.	46 by 90 in. universal slabber	29 passes Automatic sequencing	Screwdown, edger, manipulators, turning fingers, draft compensation, entry speeds, maximum speed, acceleration, tandem rolling
U. S. Steel Research Laboratories Monroeville, Pa.	Reversing hot mill	12 passes	Screwdown
Nippon Kokan K. K. Tokyo, Japan	68 in., hot-strip mill reversing rougher	9 passes Automatic sequencing	Screwdown, edger, mill speed, draft compensation

New design provides

25% to 50% GREATER HEATING SURFACE

than ordinary basket weave checkers



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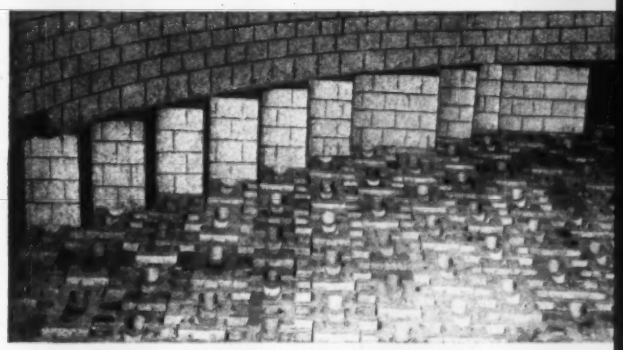

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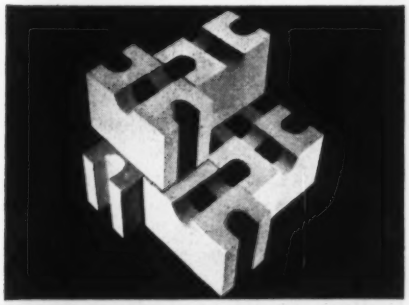

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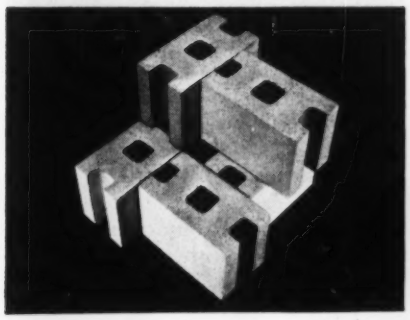

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ENGINEERS

LEADERSHIP THROUGH QUALITY

1221 BANKSVILLE ROAD PITTSBURGH 16, PA

Railroad diesel wrist pins are commonly salvaged with molybdenum. Savings are about $9 each. One railroad reports a monthly saving of $700

- Production line spraying boosts valve life three times.
- Reclamation of diesel wrist pins saves $700 a month.
- Sprayed structurals don't need upkeep for 10 to 15 years.
- Ceramics can be sprayed. They're chemically inert, abrasion resistant, and are good thermal barriers.
- Hard facing with tungsten carbide means longer wear for such things as mixing blades, and pump seals.

Metallizing Broadens Cost Saving Horizons

METALLIZING CAN be your route to cost savings via such applications as part rebuilding and reclamation.

• An automaker saves $370,000 annually with a production line machine.

Valve life increased 300 per cent when sprayed with aluminum, says Metallizing Co. of America, Chicago. This approach eliminated preignition problems caused by slivers from porous exhaust valve surfaces. Sprayed aluminum sealed the top surface and also increased its resistance to hot exhaust gases.

Metallizing also enabled the shift to a more economical material for intake valves. The maker went from the silicon alloys to SAE 8645, to SAE 1041, and then to SAE 1047. No wear problems have been encountered. The automatic equipment used with the metallizing guns was made by Lindberg Induction Heating Div., Lindberg Engineering Co., Chicago.

Other production applications include spraying of ceramic insulators with copper to provide ground sleeves and to reduce corona effects. The method can also hermetically seal glass to metal joints.

• In rebuilding, part of the advantage of sprayed metal is its porosity, which helps hold lubricants.

One railway is spraying diesel cylinder walls with molybdenum and carbon steel and is greatly increasing life. A large diesel crankshaft shop in Pennsylvania has standardized on metallizing large crank throws and mains. Stainless steel is used over molybdenum for better holding power.

Railroad diesel wrist pins are commonly salvaged by metallizing with molybdenum, says Metallizing Engineering Co., Westbury, N. Y. The saving is about $9 each.

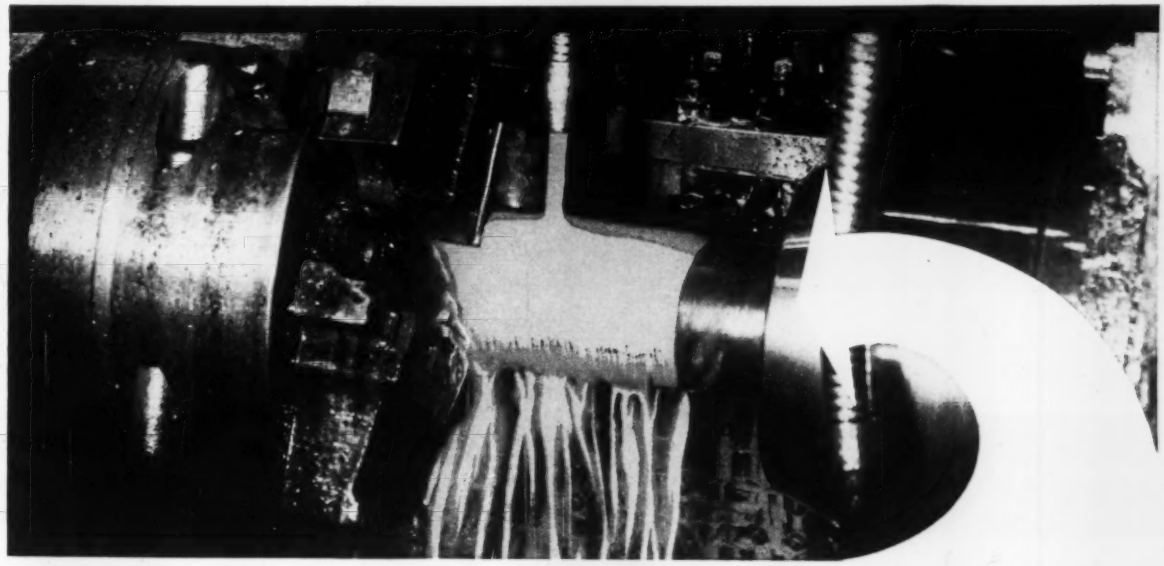
Worn pins are chemically cleaned, checked for possible fractures, and dry ground to about 0.010 in. undersize. After spraying with molybdenum, they are finished by wet grinding.

• Sprayed stainless licked a leakage problem on a cold roll reduction strip mill.

It renewed a bearing sleeve and prevented lubricating oil from leaking into the surface treatment.

The surface was undercut 0.030

a "NEW LEAF" in coolants... New 100% Chemi-Cool HOCUT cools... lubricates... prevents rust... stays mint-fresh for life!



No other cutting fluid does so much, so well, for so long... as NEW HOCUT 237

Permanently odor-free—Needs no "additive" to stay clear and fresh-smelling for life. Cannot turn rancid or harm hands. Keeps your shop clean and your operators happy.

Cools work and tools quickly—Faster cooling speeds machining time—prevents welding and chip build-up, and increases tool life.

A lubricant that works—The secret is in new synthetic high-molecular-weight lubricity additive—which, in plain language, means the needed lubrication advantages of a "soluble oil"—with none of the disadvantages.

Protects tools and work from rust—Work coming off the machine is coated with a two-stage rust preventive. Tools, ways, slides and bearings get permanent protection.

Best for economy—Initial cost is only a few pennies per gallon, in the machine. Expense of clogged filters is practically eliminated and filtration speeded up. HOCUT can be used and re-used for months and disposal is never a problem.

For positive proof of new HOCUT's unique properties and economy—in your own plant—call your Houghton Man today. Or write: E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

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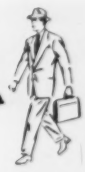


Ready to give you on-the-job service

in., preheated, then covered with a flash coat of molybdenum. Hard stainless was built up and ground finished. One mill has had 34 sleeves metallized.

Coating inside diameters involves shrinkage problems. Low shrink metals can be sprayed to a greater thickness than high shrink metals. Basic low temperature is a must. A gun extension blows the metal spray upward at a 45 degree angle to the surface.

The limitation on inside diameters is about 3 in.

• Metallized structurals can give 10 to 15 years of service with no upkeep, says one jobber.

Advantages: There are no warpage problems, and the method provides a good surface for paint. The cost for sandblasting and metallizing with zinc or aluminum to 0.003 or 0.004 in. is about 30 cents per square foot.

Zinc and aluminum are anodic to steel. The base metal is protected by a slow sacrifice of the coating metal. Barrier protection is added with impregnated vinyls, chlorinated rubber, some phenols, or silicones.

• Sprayed ceramics protect against abrasion and are good thermal barriers.

Alumina, zirconia, and other ceramic coatings are used on pistons, pump plungers, seal rings, impeller shafts, casings, and sleeves. The coating is dimensionally stable and chemically inert.

Good thermal shock resistance encourages its use in rockets.

Coatings are usually applied in thicknesses of 0.005 to 0.025 in.

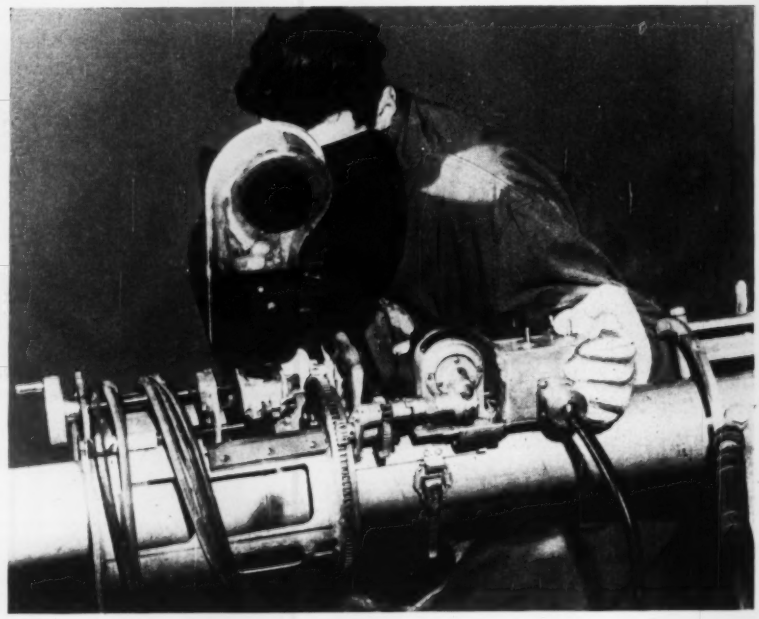
For parts to be exposed to high temperatures in an oxidizing atmosphere, one jobber likes to protect the base metal with a flash coat of a chrome-nickel alloy.

• Tungsten carbide coatings can be sprayed.

Chromium-boron-silicon-nickel alloys provide a self-fluxing matrix that bonds the tungsten carbide grains. Different carbide concentrations are available.

Typical applications include sanding templates, pump wear rings, mixing blades, and pump seals. Usual coating thickness is 0.005 to 0.125 in.

You Can Tote This Pipe Welder



PEOPLE who buttweld pipe have long felt the need for an automatic welder they could take to the job. One answer to their problem is a portable developed by Aluminium Ltd., Montreal, Que.

It's easy to use. The company says a novice can weld a 4½ in. aluminum pipe in less than 1 minute. Results are said to be excellent.

To make a weld, the unit is fastened to the pipe with a strap clamp. The welding gun and cable gear travel around the pipe as the weld is made.

• The device is made in several sizes.

Weights range from 40 to 50 lb. The welder operates with a conventional, engine driven, direct current generator. Design has been kept simple to eliminate special servicing.

Aluminium points out that this type equipment is generally pretty bulky and expensive. Trucks and cranes are needed for handling, and fairly complex electronic programing and special servicing are often required.

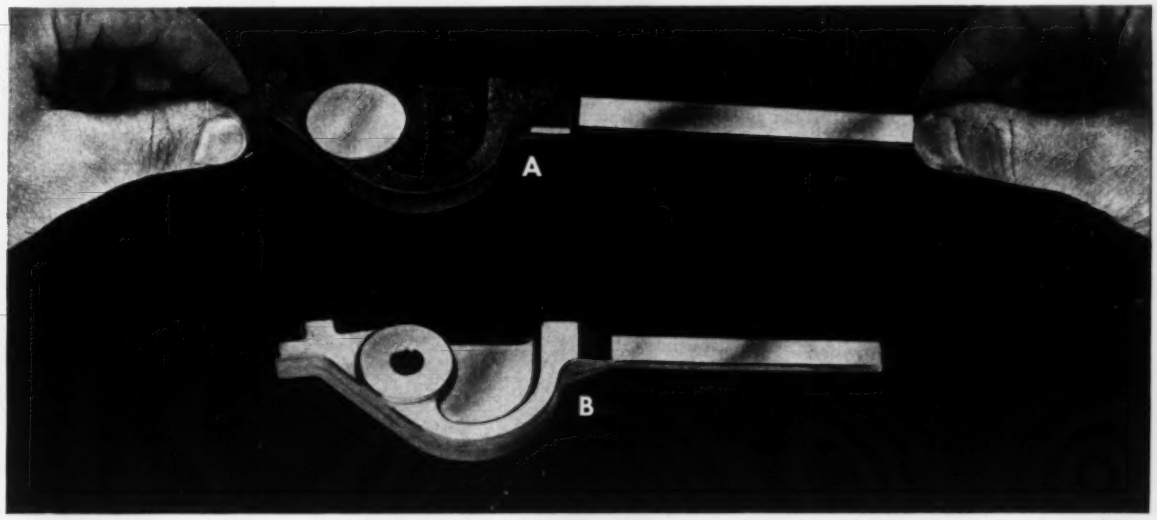
Another common complaint is that skilled manual welders are hard to keep. It takes at least two weeks to train a replacement.

• The unit is helping to boost pipe sales.

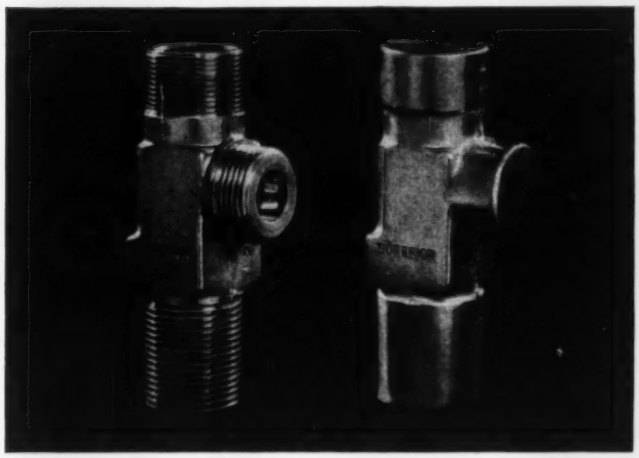
Aluminium's interest in this equipment stems from its desire to promote the sale of aluminum pipe. But those who care to try it out on other nonferrous metals, even steel, may find it profitable in certain applications.

You should be able to buy the units shortly. Prices range from $4000 to $5000.

QUALITY CONTROL PLUS SAVINGS Value analysis suggested the use of a die-pressed forging. The result: an 85% cost reduction and a stronger, tougher part.



SWITCH BLADE in overspeed limiting device on large General Electric motor-generators was originally an assembly **A**—an arm brazed to a brass casting which was machined, slotted, and drilled. After review in the company's Value Analysis program, assembly was replaced by Anaconda die-pressed brass forging **B**. The superior strength of twice-wrought metal made possible a one-piece part. The excellent finish and consistent dimensional accuracy of the die-pressed forgings eliminated all machining but the drilling operation. The over-all cost is 15% of the original part.



VALVES FOR CHLORINE AND FLUORINE shipping containers must have unusual corrosion resistance and high strength. Superior Valve & Fittings Co., Pittsburgh, specialists in handling halogens, looked for a forging alloy that would be suitable. American Brass Company metallurgists suggested die-pressed forgings of a slightly modified Everdur®-1014, an aluminum-silicon bronze, for this chlorine-fluorine service, and this customer is finding wide use for it in other severe service, too. The twice-wrought metal of Anaconda die-pressed forgings has dense structure to prevent leaks—strength and toughness to take rough handling. Yet it can be machined in automatic-chucking machines resulting in good cost control.

THE vital job of controlling quality *and* costs may be easier than you think. Anaconda technical specialists will gladly help you find the right alloy and mill form to do both. See your American Brass Company representative or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 5840

DIE-PRESSED FORGINGS SPECIAL-SHAPE TUBES
EXTRUSIONS FABRICATED METAL PARTS

products of

ANACONDA®

made by The American Brass Company

Positioning Table Capitalizes on Precision

With a repeatability potential of 50 millionths, you can make a radial drill compete with jig boring machines in some applications

PRODUCTION men are drilling and spot facing aluminum gear case covers in 30 per cent less time than they used to, and they've added savings of $2050 in tool costs. The job is being run at American Tool Works Co., Cincinnati.

Old method: Conventional drill jig machining.

New method: A tape controlled positioning table and radial drill, both new developments of American Tool Works.

The table is designed to be used on long and short runs. Controlled by an endless punched tape, it can position the work anywhere within a 20 by 30 in. working area with an accuracy of ±0.000250 (nonaccumulative) on either axis and can repeat a position within 50 millionths.

• **Hydraulic Drive** — The table moves automatically on both axes at the same time. Travel speed is constant from start to finish, but there is no overtravel.

Because the hydraulic actuating cylinders are in a balanced closed circuit, the table is held rigidly in position when the pistons are at rest.

The recommended tape is standard 1 in., eight channel Mylar laminated paper. The tape can be inserted under the low pressure air reader in any position; the control unit automatically finds the start position. Normally, the start is the loading position, directing the table to travel to its farthest front position. This permits use of a hoist to load and unload the workpiece.

• **Check Stops**—The tape doesn't move ahead to pick up information for the next position. It travels only as the machine cycle progresses. This makes it possible to move out of position repeatedly (by pushing two buttons) so the parts can be gaged when necessary. The table then can be returned to the same position for more work.

• **Setup**—During loading, the workpieces are located on the positioning table by stop plates. Using blocks of prescribed length between these plates and the parts, the operator easily locates the work without costly trial and error steps.

The radial is oriented by locating the spindle in a hole that's bored and bushed in the absolute center of the table.

The radial head and arm are then locked in place.

The table and saddle move on hardened and ground Timken graphitic tool steel ways. Each set of ways comprises one flat way and one V-way.

The V-way eliminates the need for side gibs.

Feedback signals are supplied by two Farrand electronic scales, one for the X and one for the Y axis.

Floor-to-floor time on these ductile iron column caps is 1¾ hours using this tape controlled positioning table and radial drill combination. The same job used to be done on a horizontal boring mill (in 7 hours). The operations include drilling, boring, counterboring, reaming, tapping, and spot facing. In the new setup, the maximum spacing error is held to 0.0005 in. in production

Gas Shielded Arc Aids Hard Facing

Tungsten carbide particles are deposited on melted surface of part. Process cuts rejects

ONE WAY to end hard facing production problems: Switch to a gas shielded melting arc and meter the tungsten carbide particles onto the melted surface of the part.

The process reduced rejects to less than 1 per cent at the Toledo, Ohio, plant of National Supply Co., Pittsburgh, where oil drill pipe couplings (tool joints) are hard faced.

• **With the particles out of the arc, there is little dilution with the tool joint metal.**

The carbide in the overlay is better distributed and spalling or cracking are eliminated.

Only tungsten carbide is deposited; there is no steel rod to melt into the surface of the tool joints. Grooving has been eliminated.

• **A conveyor carries the tool joints through an induction heater for preheating at 750 to 800° F.**

The tool joint is then clamped in a lathe chuck. An operator aligns the 1/8 in. nonconsumable, thoriated tungsten electrode and strikes an arc. Helium shielding gas starts flowing at 40 cfh. The tool joint is rotated when the surface melts and the tungsten carbide particles flow from overhead vibrators down a tube behind the arc.

After one revolution, the welding head indexes lengthwise two-thirds of a bead width to make another pass. Welding and indexing continue automatically until the deposit is wide enough.

• **An open arc formerly was used.**

It deposited mild steel containing 60 per cent tungsten carbide particles (by weight).

Problems encountered with that process: When the carbide passed through the open arc, some melted and some sank to the bottom of the deposit. The molten tungsten carbide alloyed and produced a hard matrix susceptible to cracking and spalling. Particles that sank to the bottom didn't help until the surface wore down to them.

Chuck Grip Scarring Ended By Bigger Gripping Area

Curved striated surfaces on the ten shoes distribute gripping pressure uniformly on couplings. Separate chuck is used for every coupling size

YOU CAN eliminate stress raising scars on couplings with screw-on chucks developed by Jones & Laughlin Steel Corp., Pittsburgh, and Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

• **Case History**—Scarred couplings were caused by single edged chuck grips on screw-on machines as the couplings were screwed into well casings. The new design has a striated gripping area 15 times larger than the old grips.

Gripping surfaces in each chuck (about eight to ten) are curved to the same radius as the coupling. Separate chucks are used for each coupling size.

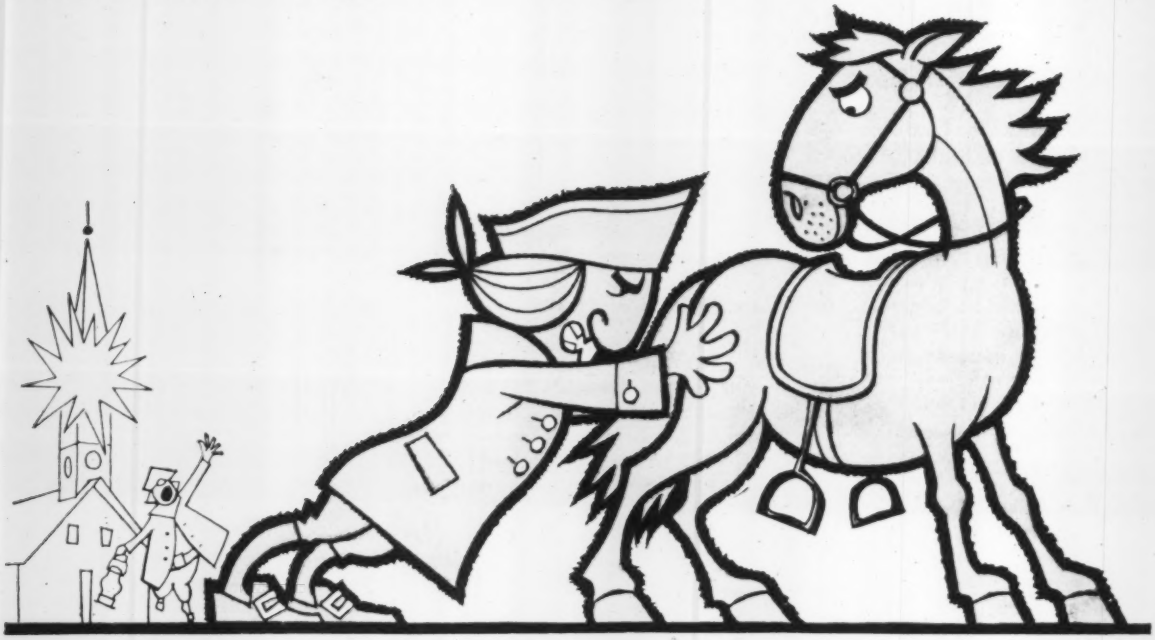
To insure even pressure distribution, the gripper shoes can turn slightly (in lubricated sockets) as the grips are being tightened.

Coupling chucks of this design are being made for tightening couplings on casing.

J&L also makes oil country tubular products.

Screw-on machine chucks for high strength J&L Buttress thread casing now have gripper shoes that do not leave stress-raising scars on couplings

Man's Eternal Struggle with the Machine



THE REQUIREMENTS OF THE SPACE AGE DEMAND MORE FROM MACHINES AND TECHNIQUES THAN EVER BEFORE

Will the conquest of space wait while you make new machines work right?

Hardly! Not when the competition is boasting they'll bury us all.

Your job is to produce missiles and space craft. That's a full-time job in itself. Your responsibility for specifying equipment and processes only adds to that work-load. Obviously, you can't afford to be buried under new machines that can't be qualified and certified in the shortest time with the least expense and effort.

Sciaky knows you have to produce on time and to the most rigid specifications. That's why Sciaky's responsibility just *begins* with equipment design and manufacture. That's why Sciaky welding machines are fully tested and proved to do *your* job *before shipment*. That's why Sciaky machines are commonly installed, qualified, and certified in the shortest possible time. And, that's why Sciaky Service Engineers are ready to back you fully.

Why take less than the full advantage of talking with a Sciaky Application Engineer when you are considering equipment. No obligation, of course.

The aviation industry has been taking that advantage ever since Sciaky machines made it possible to resistance weld aluminum in production. The entire Sciaky organization has been built by satisfying people just like you. As a result, Sciaky has produced almost all the basic advances to the technology of resistance welding since the year 1917.

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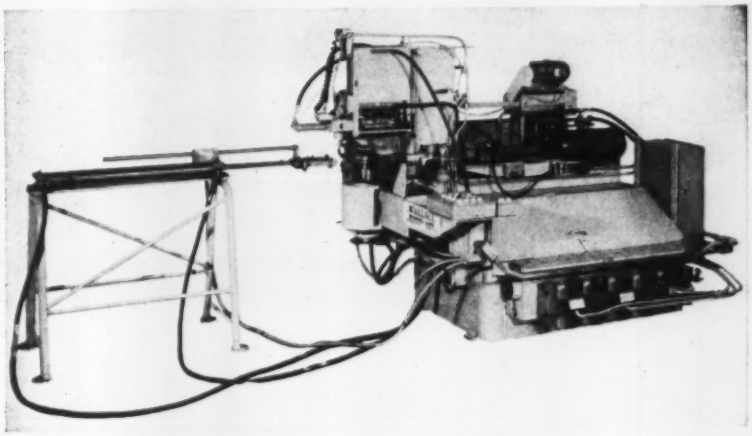
Machine Makes Tube Bending Fully Automatic

PRODUCTION tube bending can be done automatically with a new Wallace machine. Press the button and tubes are fed into position, bent, and removed automatically.

Two tubes can be processed during each operating cycle. Simple tooling changes provide versatility in bend types: Flat-back U-bends can be produced at a rate of 1800 an hour; conventional return bends can be made at a rate of 980 an hour.

From a hopper collector, a special finned elevator picks up tube lengths and indexes them into a pair of vertical stacked loading trays. Sorting fingers fill both trays with tubes. Sequence controlled hydraulic cylinders select the tubes from the trays and re-index them into the bending dies. The clamping dies advance and secure the tubes in the forming dies. Mandrels are automatically inserted into the ends of the tubes to support them during bending. After bending, the clamps open, and a stripper mechanism removes the tubes from the bending dies and drops them into a conveyor.



Features of the machine include a provision for an audible alarm which warns material handlers that 30 minutes or less remain before the tube supply will be empty; a speed and rotation control of the hydraulic bending cycle; and a pressure lubrication system.

For more information, *write* Wallace Supplies Mfg. Co., 1304 Diversey Parkway, Chicago 14, Ill.

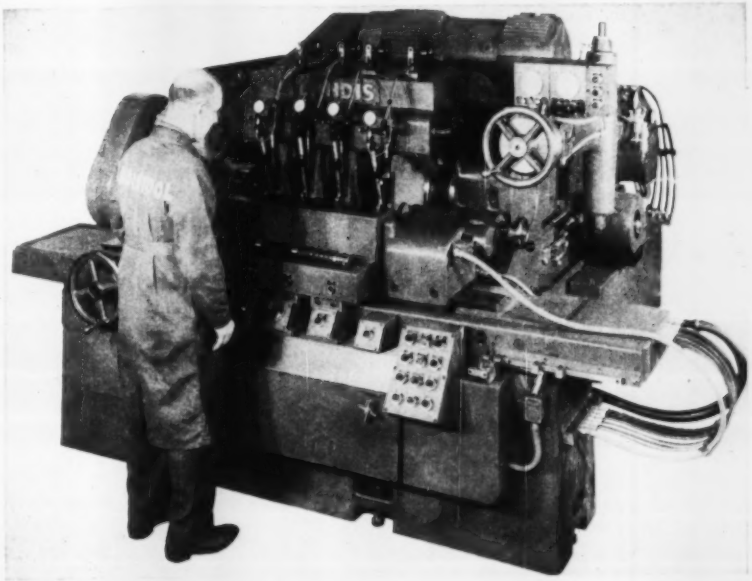
Grinder Machines Multiple Shaft Diameters

YOU CAN grind two or more concentric diameters to close tolerances on a production basis with the Landis Type IWR multiple wheel grinding machine.

It will handle such parts as crankshaft and camshaft line bearings, transmission shafts, and components of jet engines. Diameters can be straight or profiled.

All hydraulic controls are mounted on a panel away from the bed. Hydraulic oil and coolant reservoirs are in separate tanks outside the beds. Only the feed and traverse cylinders are within the machine. This design keeps the machine at room temperature and minimizes machine growth and possible inaccuracies in the machine alignment.

The Landis Microfeed wheel feed system automatically compensates



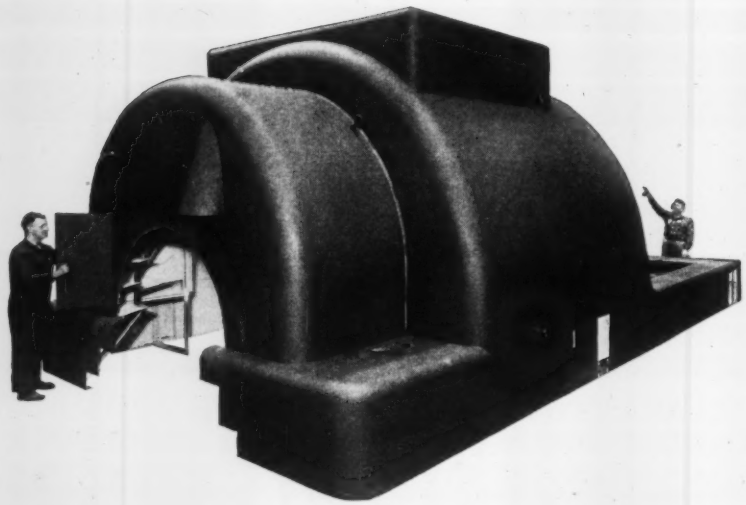
CUSTOM SHEET & PLATE FABRICATION

It takes modern equipment plus craftsmanship and know-how to produce fabrications such as the giant generator housing shown here—illustrative of Kirk & Blum's ability to produce the unusual as well as the conventional types of weldments. In its 170,000 sq. ft. plant, with crane capacity to 25 tons, Kirk & Blum has complete facilities to produce, preassemble and finish a wide variety of carbon steel, stainless, aluminum, monel and other alloys assemblies up to ½" thickness. Fifty years of exceptionally varied experience is your added assurance that the job will be done quickly and economically.

Send prints for prompt quotations or write for detailed literature: The Kirk & Blum Mfg. Co., 3226 Forrer St., Cincinnati 9, Ohio.

ELECTRICAL ENCLOSURES AND HOUSINGS
CONTROL PANELS AND DESKS
BREECHINGS • STACKS • AIR AND GAS DUCTS
CASINGS • LOUVERS • BINS • HOPPERS • CHUTES
INSULATING JACKETING
ALUMINUM AND ALLOY FABRICATION

KIRK & BLUM
FABRICATION



for variables which may be introduced by deflections of machine parts from grinding forces, variations due to minor temperature changes, changes in wheel characteristics due to grinding and dressing, and variations in feed rates due to temperature changes of hydraulic oil.

A new idea in work rest design is used on these machines. The shoes are automatically advanced by sliding tapered blocks. This causes the shoes to follow the work diameter as it is reduced and prevents the shoes from backing up due to grinding forces.

For more information, *write* Landis Tool Co., Waynesboro, Pa.

Flat Lapping Machine Mechanizes Handwork

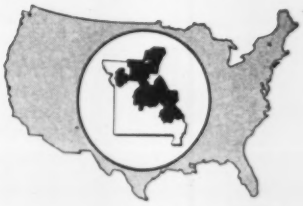
ANY mechanic can generate lapping accuracies within one light band (0.0000116 in.) on the Spiralap line of flat lapping machines.

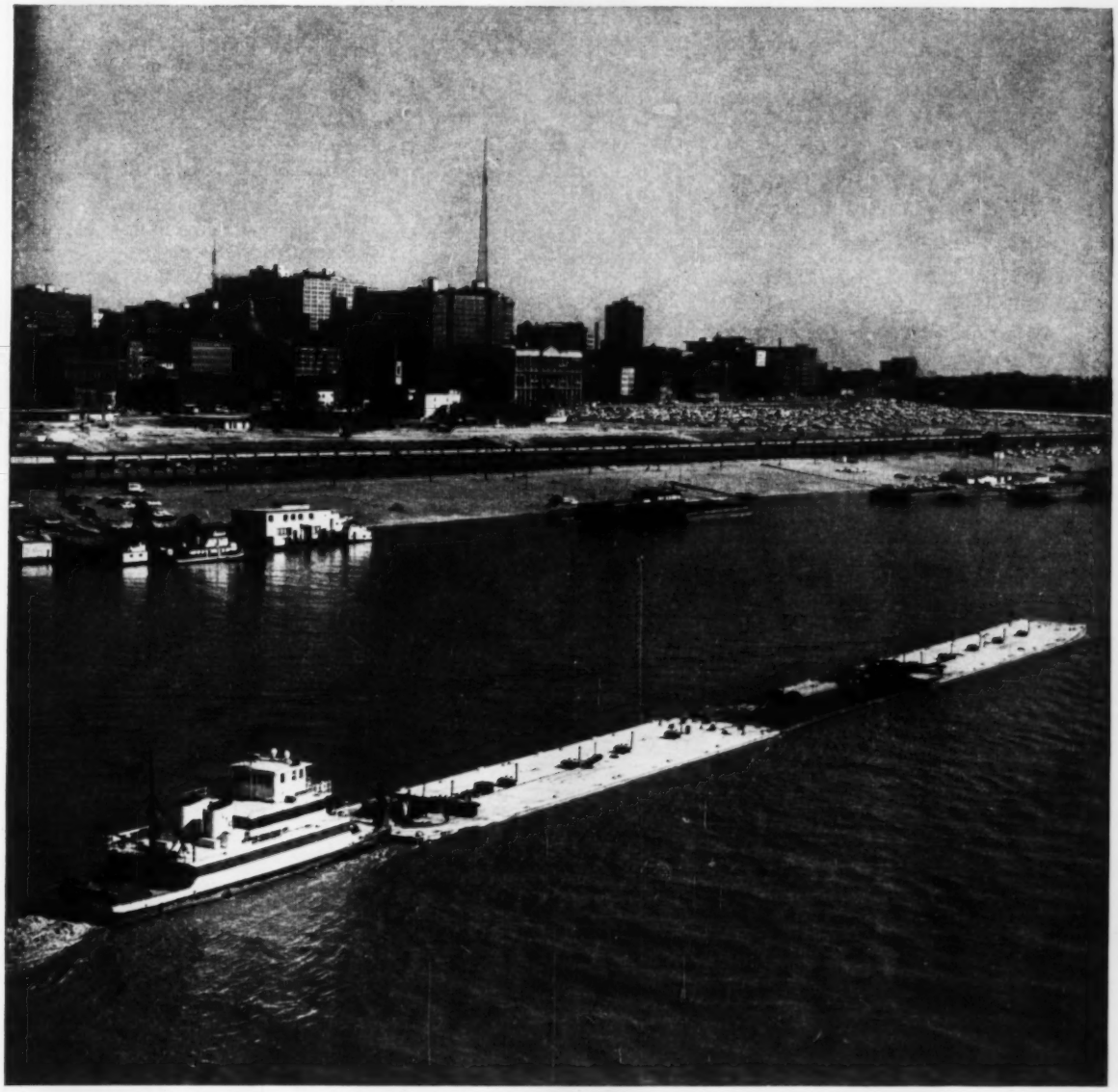
The machine features a lapping plate with a spiral groove filled with abrasive compound; two (or more) adjustable work locating arms to rotate the workpiece; and two timers to control the work cycle and to total the use time of the lapping plate between conditionings.

As the plate rotates, a steady supply of compound moves between the workpiece and the plate, inducing consistent abrading action.

Quality control is maintained through the ability of the machine to relap its own plates. The ma-

Union Electric Service Area . . . strategic center of America for INDUSTRIAL WATER





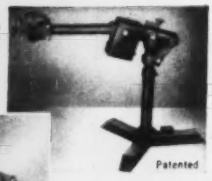
The mid-continent rivers make up the world's greatest inland waterway, connect 29 markets in 20 states.

contact: *J. E. Johanson, Manager, Industrial Development,*
UNION ELECTRIC CO., St. Louis 1, Mo.

ARONSON
Offers You Over 200 PROVEN Standard Stock Models of Quality POSITIONERS "POSITIONEERED" to your exact Requirements

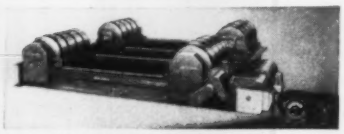
Patented

Aronson TracTred (T. M. Reg.) Turning Rolls for thin-walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built-In Grounding.



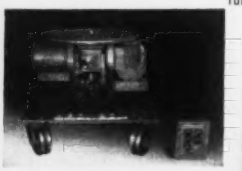
Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs

Patented

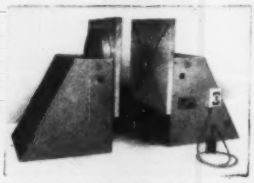


Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls, 100% overload protected. Capacities to 600 Tons.

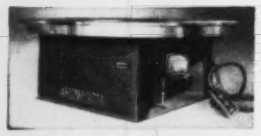
Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



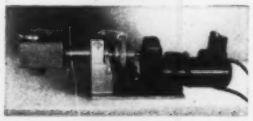
Model D Gear Driven Positioners. Compact. Precise. Rugged. Capacities to 1000 lbs



Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.



Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.

Quality POSITIONERS by *Aronson* MACHINE COMPANY
ARCADE, NEW YORK

SURPRISE IN CHICAGO

You should know these surprising facts about Chicago's incomparable Drake Hotel before you schedule your next meeting—large or small . . .

1. While The Drake is one of America's most distinguished hostelries, it doesn't cost one cent more than other leading hotels to headquarter your meeting here.
2. The Drake is "alive." Meetings go like clockwork and everyone enjoys the warm, hospitable service in a setting of luxuriant comfort.

Now $8,000,000 new! No hotel in the midwest can match The Drake for unsurpassed convenience, location, facilities. 4 major meeting rooms accommodating up to 800, plus 16 committee rooms for functions of 12 to 300. 700 guest rooms. 100% air conditioned. Phone or write today for free brochure.

DICK FLYNN
V. P.—Sales

The Drake
HOTEL
LAKE SHORE DRIVE AND UPPER MICHIGAN AVENUE
SUPERIOR 7-2200 • TELETYPE NO. CG1586

NEW PRODUCTS and equipment

chine is supplied with three plates which are lapped and mated at the factory. When reconditioning of a plate is necessary, it can be relapped with one of the other plates, which takes only a few minutes and assures a plane surface as true as one lapped by hand.

For more information, *write* Micromatic Hone Corp., 8100 Schoolcraft Ave., Detroit 38, Mich.

Micrometer Checks Depth

MANY manual operations in checking depth dimensions can be eliminated with the Besly Readepth, a depth indicating micrometer.

The instrument saves time because one visual reading replaces the trial and error method. It saves money because it can be readily set to changed dimensions and replaces many fixed and setup gages.

It can be accurately reset with the masters supplied. Consistent accuracy from 0 to 3 in. is assured because resetting is required only when the contact rods are changed. It can be used to check the depth of holes, slots, and keyways.

For more information, *write* Besly-Welles Corp., South Beloit, Ill.

Fast Cycling Furnace Does Wide Range of Jobs

HEAT TREATERS can temper, anneal, stress relieve, precipitation harden, and perform other heat treatment in the Hayes Type D Flexotemp furnace.

It is capable of reaching any desired temperature, either up or down scale in a matter of minutes. Another important feature is temperature uniformity within ±5° F during the treatment cycle.

The furnace has proportional heat control which provides maxi-

New Bastian-Blessing handle (shown at right) **is delivered by Chase Brass in multiple lengths, to avoid waste in cutting.** (Note contrast with old handle.)

Ask Bastian-Blessing

How to get new product appeal and easier manufacture

Bastian-Blessing Company has for years made a complete line of welding torches. On one of their models they used a regular brass tube which was knurled during the manufacturing process. To increase the attractiveness of this torch and minimize production problems—they developed the idea of a fluted tube.

The customer wanted a mill-drawn surface which would need no further finishing—except scratch brushing. Flute spacing had to be kept regular; interior diameter had to hold vital concentricity. The Bastian-Blessing Company in cooperation with Chase Brass & Copper Co. was able to achieve their objectives:

- **Better style—more eye-appeal.**
- **A much more comfortable and easier-gripped handle.**
- **Improved machineability.**
- **A more rugged product than before.**

PLUS—costs kept in line with the old handle!

Whatever product you design or make, chances are you can do it better with Chase Brass—alloyed from copper by Kennecott. Your nearest Chase Representative is ready to discuss your needs with you. You can reach him locally or by writing Waterbury 20, Connecticut.

Chase®

BRASS & COPPER CO.
WATERBURY 20, CONN.
Subsidiary of
Kennecott Copper Corporation

THE NATION'S HEADQUARTERS FOR **ALUMINUM • BRASS • BRONZE • COPPER • STAINLESS STEEL**

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

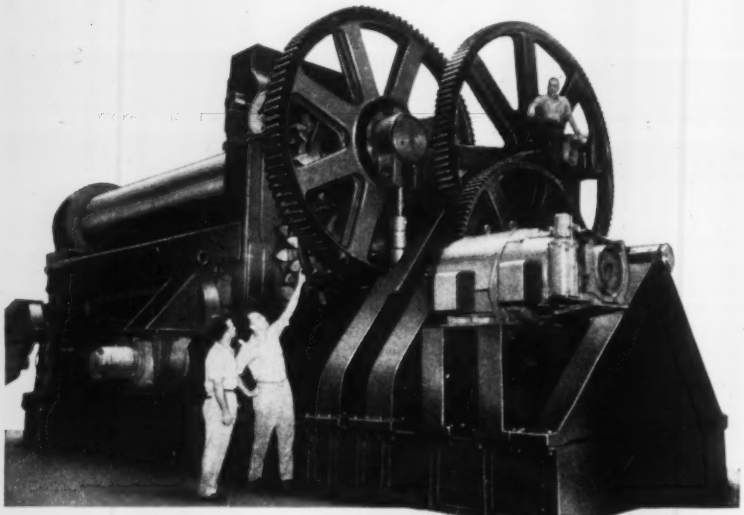
Huge H&S Gears

drive world's largest bending machine

Horsburgh & Scott is proud to have supplied the spur gears that drive this machine—designed and built by Bertsch & Co., Cambridge City, Indiana. Largest of its kind, it bends cold steel plates up to 4¼ inches thick, 16 feet long; weighs over ¾ of a million pounds.

Horsburgh & Scott has facilities to generate gears up to 125″ diameter and to form-mill spur gears up to 160″. We have a complete industrial gear line including worm, helical and herringbone speed reducers.

Tell us your needs. We'll be glad to help you select the proper gearing for you.



2100-ton pressure shapes hull plates for atomic-powered submarines

H & S bronze worm gears adjust forming rolls

Send for your free copy of H & S Gear Catalog No. 57.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 Hamilton Avenue • Cleveland 14, Ohio

NEW PRODUCTS and equipment

mum power during heat-up, and minimum power requirements when set temperature is obtained. High-speed Chromel-A coil elements work with fan-induced circulation of air to accelerate heating and insure even distribution throughout the load.

Maximum temperature of the unit is 1250° F. Models are available with work baskets from 22 to 36 in. in diameter and from 30 to 48 in. deep. A geared mechanism permits effortless opening and closing of the insulated lid.

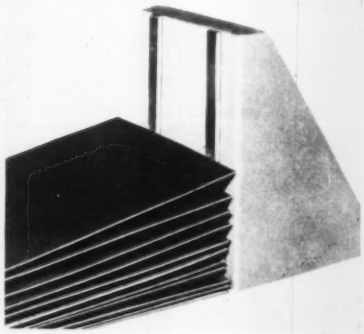
For more information, *write* C. I. Hayes Inc., 822 Wellington Ave., Cranston 10, R. I.

Magnetic Sheet Fanner Speeds Steel Handling

FASTER, safer handling of sheet steels is possible with a new permanent magnet fanner.

When sheets are stacked against the fanner, a magnetic field makes the sheets repel each other and fan out automatically. Handlers may remove single sheets easily and quickly, with less danger of injury to hands.

The fanner uses a recently de-



ULTRA-NEW!
ULTRASONIC!

DETREX ECONO-SONIC Unit Uses Sound Waves to Get Precision Parts Cleaner, Faster

Ultrasonic cleaning—a combination of solvent vapor degreasing and scrubbing action by high frequency sound waves—gets parts cleaner than is possible by any other method. Costs are reduced and production is increased.

The DETREX ECONO-SONIC dimensions are 24" x 14" x 29" high. This size is ideal for precision part cleaning in small to moderate sized plant operations.

With its own filter, still, pump, heater, spray lance and model 600 generator, it is a complete, self-contained cleaning system. There is nothing else to buy and it installs in minutes.

Where hyper-critical specifications exist, Detrex can supply the additional stages necessary to accomplish an in-line cleaning system. Why not write today and let a DETREX representative show you how an ECONO-SONIC unit, or a larger ultrasonic machine, can improve the quality and reduce the expense of your metal cleaning operation.

Depend on DETREX for Every Metal Cleaning and Processing Need

- PERM-A-CLOR NA (Trichlorethylene)
- Solvent Degreasers
- Ultrasonic Equipment
- Industrial Washers
- Phosphate Coating Compounds
- PAINTBOND Compounds
- Aluminum Treating Compounds
- Alkali and Emulsion Cleaners
- Rust Proofing Materials
- Extrusion and Drawing Compounds
- Spray Booth Compounds

Send for T. J. Kearney's Informative Paper on Ultrasonic Cleaning Techniques.

DETREX CHEMICAL INDUSTRIES, INC.
Box 501, Dept. S-559, Detroit 32, Michigan

World's Largest Exclusive Producer of Cleaning Chemicals and Equipment

Here come 10,000 valves
...and all with uniform hardness

Even heat throughout a dense, 2,000-lb load . . . 10,000 uniformly hardened valves every time . . . valves free from distortion with no rejects.

Eaton Manufacturing Company's Valve Division in Battle Creek, Michigan, expects and *gets* performance like this from their Hevi-Duty pit furnaces. The furnaces are used 24 hours a day for the age-hardening of valves for automotive and industrial engines. An efficient baffle and fan system provides an even rate of heating throughout the dense load, adding to over-all uniformity.

Eaton purchased five small Hevi-Duty pit furnaces early in World War II. Exceptional performance by these furnaces led to the addition of larger units to meet increased demands. All units have given excellent service. None have required more than normal maintenance since installation.

If uniformity is important in your work, investigate Hevi-Duty furnaces. Write for Bulletin 646.

- Heat Processing Furnaces
- Dry Type Transformers
- Constant Current Regulators

HEVI-DUTY ELECTRIC CO.
Milwaukee 1, Wisconsin

NEW PRODUCTS and equipment

veloped, ceramic material, Indox V, which has a strong, uniform magnetic field and high resistance to demagnetizing influences. The flux pattern of the Indox V magnet provides more positive separation of sheets under particularly difficult conditions (such as dirt or oil that tend to make sheets sticky), the manufacturer claims.

For more information, *write* Stearns Magnetic Products, 635 S. 28th St., Milwaukee 46, Wis.

Hard Surfacing Electrode

A HIGH alloy, hard facing electrode, called Stoody 2134, has high resistance to extreme abrasion, medium impact, and high compressive loads. Field experience indicates that the material may be expected to provide service life surpassed only by the tungsten carbides.

A tubular electrode with a graphitic coating, it contains about 43 per cent alloy materials. It deposits readily on carbon, low alloy, and manganese steels. It is magnetic, nonmachinable, and nonforgeable.

Hardness ranges from 56 to 60 Rockwell C with a two-pass deposit on medium carbon steel. Water quenching from 1750° F increases hardness to 63-65 Rockwell C. Deposits will not work harden.

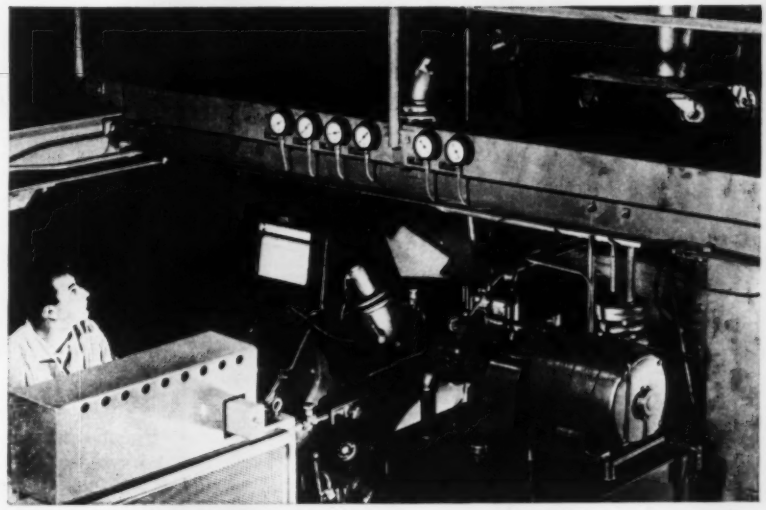
For more information, *write* Stoody Co., Whittier, Calif.

Rebuilds Circular Parts

REBUILDERS of circular parts such as worn rolls, idlers, and other equipment can do a better job with the flux recirculating Model DEMS rebuilding machine.

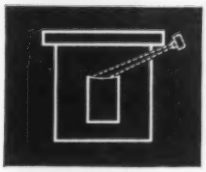
A 150 lb flux container is attached to the carriage. A nozzle on each of the two wire feeds picks up all the unfused flux and dust used in the welding operation. Two outlets at the bottom of the flux container return the flux to the hoppers for re-use.

Other features of the machine include a single console, dual power, 100 per cent duty cycle, con-



CONTINUOUS MELT RECORD AT 3000°F with the *Radiamatic* unit (arrow) attached to a Stokes semi-continuous vacuum furnace at Allegheny Ludlum Steel Corporation, Watervliet (N.Y.) Works. Honeywell engineers worked with Allegheny-Ludlum to provide a constant record of vacuum furnace temperature—without calibrating rheostats or other complicated adjustments.

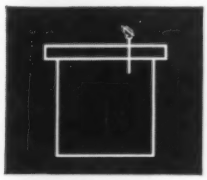
Honeywell has the tools to solve your high temperature measurement problems



RADIAMATIC RADIATION DETECTORS

For measuring temperatures to 7000°F.

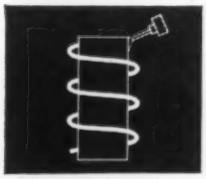
Measure "problem" temperatures with *Radiamatic* detectors. Use them to measure the temperature of moving objects without physical contact . . . or for representative temperatures over large areas. Available in many models including a small-target unit with ¼" aperture for temperatures up to 7000°F.



THERMOCOUPLES

For sensing temperatures in the area of 4000°F.

New experimental Honeywell thermocouple materials like Rhenium-Molybdenum and Rhenium-Tungsten measure temperatures as high as 4000°F. Great diversity of elements and accessories permits you to select the thermocouple which fits your application exactly.



SAPPHIRE RODS

For measuring temperatures to 3600°F.

Sapphire rods, used as lenses in *Radiamatic* pyrometers, provide accurate high-temperature measurement where such measurement previously could not be made by conventional means . . . can "sight" on a target as small as ⅛".

Precise measurement of high temperatures is almost an art. Working effectively with temperatures over 2800°F. calls for an intimate knowledge of materials and methods that can be gained only from broad experience. Through this experience—in every aspect of metal processing—Honeywell has developed special techniques and equipment for measuring high temperatures.

Honeywell offers you the sum total of this experience in engineering assistance and an all-inclusive line of instruments, special-purpose measuring devices, thermocouples and accessories. Combined, these tools and techniques can give you better products and day-to-day production economies.

Your nearby Honeywell field engineer will be glad to discuss your requirements. Call him today . . . he's as near as your phone.

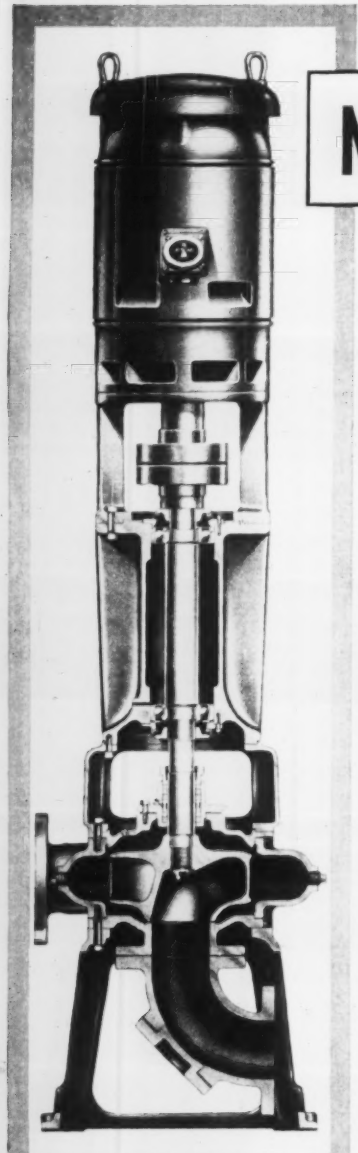
MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

For higher pumping efficiency

of solids in suspension!



NEW

Fairbanks-Morse

5440A Non-Clog Pumps

Ideal for pumping unscreened liquids with large solids in suspension

- **industrial wastes**
- **sanitary sewage disposal**
- **industrial processes**

Here is your answer to higher efficiencies wherever you are pumping solids in suspension!

All-new Fairbanks-Morse 5440A Non-Clog Pumps feature quick, easy convertibility between any of the many vertical and horizontal types. Power requirements of the pump are always perfectly matched to the electrical and mechanical components. Precision-machined centering fits assure accurate alignment. Exclusive F-M bladeless impeller design minimizes maintenance by preventing clogging from solids and stringy material. The 5440A is only one of many F-M solids-handling pumps designed to meet a broad range of requirements. For information, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

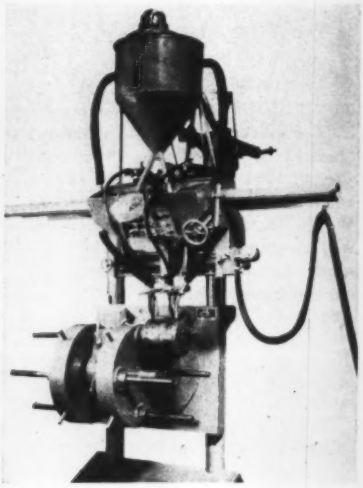
Ask for new 5440A BULLETIN!

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

ELECTRIC MOTORS • DIESEL, DUAL FUEL AND GAS ENGINES • PUMPS
COMPRESSORS • GENERATORS • MAGNETOS • HOME WATER SYSTEMS

NEW PRODUCTS and equipment



stant voltage power source; a cantilever arm with two 4-spindle units; two wire feeders; 360 degree rotation of the cantilever arm; and module designed electronic controls.

For more information, *write* L & B Welding Equipment Inc., 2424 Sixth St., Berkeley, Calif.

Fork Lift Trucks Have High Maneuverability

A SHORT wheelbase (only 36 in.) allows two new Elwell-Parker electric trucks to operate easily and efficiently in crowded aisles and dock areas.

The 2000-lb and 3000-lb capacity trucks also have special low height operator's seats designed to keep his head below the top of the uprights. Result: Maximum ease and safety during operation in such

daddy's home!

After the hard work, the petty irritations, this is the moment that gives the day its meaning. This is the distillation of all that you are striving to preserve.

But in the routine of making a home and earning a living, there's one essential that it's too easy to overlook: your health...the health of your family.

Have you done all you can to protect yourself against cancer? *A health checkup every year is "living insurance."*

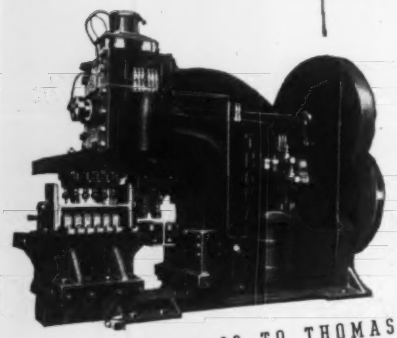
Have you done your share to protect your children? *Today's research will mean better methods of treatment, possibly prevention, tomorrow.*

Let the glow of your next homecoming be your reminder: *Guard Your Family—Fight Cancer with a Checkup and a Check.*

Send your check to "Cancer,"
c/o your local post office.

American Cancer Society

BEAM PUNCHING
without tool change



THE TREND IS TO THOMAS

THE newly designed Thomas Beam Punches are built in sizes to handle beams up to 12"-18"-24"-30" and 36", web and flange punching, with a single tool set-up. Any of the five sizes may be used with or without a Thomas spacing Table, depending on production needs.

• *Write for further information*

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 23, PA.

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

51 a

GOES OVER BIG for wheeling and dumping heavy materials

Costs Less per Year

Specify Sterling No. 119
HEAVY-DUTY CART
Pneumatic-tired wheels or steel wheels

Write for Bulletin or see nearest dealer.

Some areas open for dealerships.

Here's a cart that's "tailor-made" for wheeling coal, scrap, chips, turnings, borings and similar heavy materials. All-steel, completely welded and reinforced. Made extra strong and rugged for heavy-duty service. Dumps easily. Rests securely in any one of the three positions shown here. Available with steel wheels or pneumatic-tired wheels . . . plain or roller bearings.

STERLING NATIONAL INDUSTRIES, Inc.
Founded 1904 as
Sterling Wheelbarrow Co.
MILWAUKEE 14, WIS., U.S.A.

Sterling
WHEELBARROWS
Look for this Mark of STERLING Quality

A-7846-½R2

NEW PRODUCTS and equipment

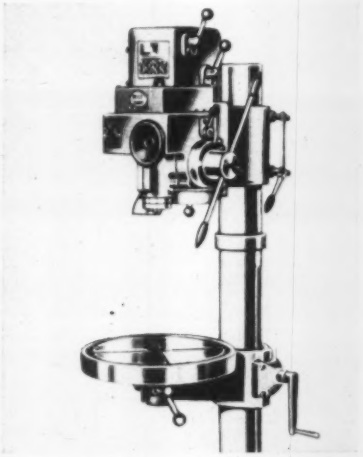
areas as covered carriers, tunnels, and basements.

The new models feature hydraulic lift and tilt, specially designed caster type steering axles, and dependable worm gear drive reduction units. Travel speeds up to 6 mph and lift speeds of 45 fpm permit fast handling cycles.

For more information, *write* Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Heavy Duty Drill Has Geared Drive

A POSITIVE all-gear drive on a new line of drill presses eliminates tight belts, pulleys, and guards. It also maintains high torque at low speeds to permit drilling larger holes and the use of larger multiple spindle attachments.



Being built in Sweden for Boice-Crane Co. distribution in the U. S., the drills have gear shift speed selection for fast drilling, slow reaming, or spot facing on the four-speed model. Instant 2 to 1 speed changing is possible on the eight-speed model, by the addition of a built in, two speed, three phase motor.

Provision for tapping by means of a hand switch to reverse direction is standard on 24-in. and optional on 18-in. models.

For more information, *write* Boice-Crane Co., 1018 W. Central Ave., Toledo 6, Ohio.

NEW literature

Write directly to the company for a copy

Remote Weight Recording

An 8-page brochure describes late developments in transmitting and processing of weight data. Form 2975a. Toledo Scale Div., Toledo Scale Corp., Toledo 12, Ohio.

Metal Shipping Containers

"Re-Usable Steel and Aluminum Shipping Containers," 12 pages, shows various types of metal containers and their advantages in shipping of critical parts. DeVilbiss Metal Fabricators Co., 5741 Russell St., Detroit 11, Mich.

Surface Grinder Catalog

A catalog illustrates hand operated and hydraulic precision surface grinders. Complete specifications and features are included. Landis Tool Co., Waynesboro, Pa.

High Temperature Fans

A series of high temperature radial fans and plug units for service to 1850° F is described in a booklet, No. RF 589-H. Garden City Fan Co., 801 N. Eighth St., Niles, Mich.

Borescopes

A 12-page brochure describes many types of borescopes used to inspect small, internal areas. National Electric Instrument Div., Engelhard Industries Inc., 92-21 Corona Ave., Elmhurst 73, N. Y.

Stainless Steel Handbook

"Microrold Stainless Steel Handbook," 36 pages, covers commercial stainless steel sheet and strip grades produced by Washington Steel. It lists comparative corrosion resistance tables of Types 302, 316, 430, and aluminum Type 1100. Washington Steel Corp., Washington, Pa.

Production Tips

A 16-page brochure shows 14 different setups to illustrate how various operations can be combined on a unit-type Model O Bore-Matic for automatic machining simultaneously or in sequence. Heald Machine Co., 7 Bond St., Worcester 6, Mass.

NEW BOOKS

How to Take a Case Before the National Labor Relations Board, Bureau of National Affairs Inc., 1231 24th St. N. W., Washington 7, D. C. 386 pages, $7.85. This revised edition will serve as a practical guide for everyone who does business with the National Labor Relations Board. It explains the jurisdiction and machinery of the board, tells how and why an election is conducted, tells how to remedy unfair labor practices, shows where to appeal and how to petition, and details what the board looks for in investigations. The author is Louis G. Silverberg, director of information for the NLRB.

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Building such muffles is a job that requires experienced engineering design as well as exceptional skills and craftsmanship in handling special alloy fabrication. Rolock offers you both these essentials. A constantly growing file of successful case histories shows important long-range savings to the muffle user. Let us quote on your next job . . . whether it's a standard replacement or one presenting problems to be solved.

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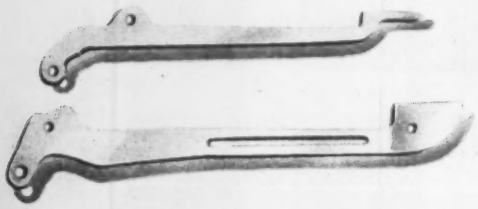

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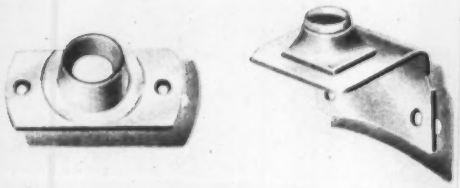

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ANALYSIS: AISI 1055 • **ROCKWELL:** B 85-95
MICROSTRUCTURE: Uniform grain structure and carbide distribution
GAUGE TOLERANCE: ± .0003" including crown
WIDTH TOLERANCE: ± .005"
SIZE: 2" x .0384"
FINISH: No. 2 • **EDGE:** No. 3
COIL SIZES: 200/250 lbs. per in. width

ANALYSIS: AISI 1045 • **ROCKWELL:** B 72 max. Deep drawing qualities
MICROSTRUCTURE: Well rounded and uniformly distributed carbides in a ferrite matrix
GAUGE TOLERANCE: ± .001"
WIDTH TOLERANCE: ± .005"
SIZE: 1½" x .020"
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May 4, 1959

Steel Price Stability Up to Union

UNLESS THE UNITED STEELWORKERS sign a contract that won't materially increase steelmaking costs, expect higher prices this summer.

Industry leaders are determined to hold the line on wages (see Page 37), but the USW has the trump cards. If it resorts to the usual tactic—a long, drawn out strike—steelmakers may be compelled to settle. Customers will start clamoring for steel and government leaders will forget what they said about inflation.

POSSIBILITIES— Settlement with USW will probably cost the industry at least 6 cents more per manhour for each year of the contract and possibly as much as 11 cents. If costs go up 6 cents an hour, steelmaking costs will go up about $1.08 per ton (18 manhours). An increase of $2.16 would be warranted because costs of purchased goods and services usually go up as much as direct labor. A 10 cent an hour boost would mean $3.60 a ton.

If steelmakers decide that price relief is mandatory, don't be surprised if the increase comes out in two installments—one right after the contract is signed (offsetting higher labor charges) and another about six months later (covering passalong costs) if the economic climate is right.

DELIVERIES LENGTHEN— Since most mills are sold out for the first half, attention is focused on deliveries. In the last few weeks, several steelmakers have fallen behind—especially on galvanized, cold-rolled, and hot-rolled sheets. Some mills are five weeks off schedule. Consumers are starting to complain because they're chewing up steel faster than anticipated. If suppliers are four weeks in arrears now, they'll probably be in worse shape by June.

SHIPMENTS AT PEAK— Steelmakers are producing and shipping at capacity. They're not overbooked in terms of optimum performance, but they've made no allowance for breakdowns, wildcat strikes, or transportation tieups. Deliveries are almost sure to lengthen even if production remains at a record high.

BARS AND PLATES TIGHT— Bar mills aren't full for June, but they know where their tonnage is coming from. Demand is strong in all of the major markets—automotive, cold finishing, machinery, farm equipment, and railroad car building. After months of inactivity, service centers are buying heavily for June delivery.

Plate producers are nearly sold out for the quarter. In the Midwest, deliveries from 100 and 160 in. mills are ten days to two weeks late. One company is a month behind on shipments from its 96 in. mill. In the East, leading sellers of sheared plates estimate that they'll have carryovers of at least two weeks.

GALVANIZING FUTURE BRIGHT— The outlook for galvanized sheets is "bright," says Leslie Irvine, Wheeling Steel Corp.'s assistant vice president of sales. He predicts that 4 million tons will be needed in 1961.

PRODUCTION SETS RECORD— Last week, steelmakers operated their furnaces at 94.5 per cent of capacity and produced 2,676,000 ingot tons, the largest output in history. April's production was 11.3 million tons, second only to that of March (11,567,000).

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*Current prices were published in the Apr. 27 issue and will appear in subsequent issues.

Handy & Harman EASY-FLO 35 So Effective Yale & Towne Redesigns 39 Parts for Silver Brazing

See This Being Made at the Design Show

...BRAZED Fork Lift Clutch Cage jolt and accident proof

Clutch cage for Yale & Towne's Industrial Trucks; fabricated by John V. Potero Company, Inc., Philadelphia.

One of the problems in operating a fast-moving, stop, go and back-up fork lift truck is accidental overtravel of gear-shifting from forward to reverse and vice versa. The result, of course, is a useless unit.

This simple clutch cage makes it impossible to jam a fork lift's gear box with resulting time lost for repair. The operator can't make a mistake.

The frame and shaft, of separate pieces, are made of mild steel. The shift lever lock, in the center of the shaft, is made of hardened steel. It is positioned by two tubular sleeves of mild steel. The entire assembly is hand torch-brazed with EASY-FLO 35 and HANDY FLUX with no loss of hardness.

Welding was considered but rejected because of the necessary follow-up of "spatter" cleaning. With simple silver brazing, flux removal is the only finishing operation required. This, plus the fact that silver brazing is much *easier* (your operator need not be a practiced "torchbearer"), has prompted Yale & Towne to redesign thirty-nine of their parts and components so that they can be brazed.

Come see this part being brazed at the Design Engineering Show in Philadelphia, May 25 through 28; at Handy & Harman's Booth 115. Any questions you may have between now and then about silver alloy brazing and the benefits it imparts to thousands of components, parts and assemblies, may be addressed to Handy & Harman, 82 Fulton Street, New York City 38.

FOR A GOOD START: BULLETIN 20.
This informative booklet gives a good picture of silver brazing and its benefits... includes details on alloys, heating methods, joint design and production techniques. Write for your copy.

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STEEL
QUARTERLY SURVEY

MILL PRODUCTS	CURRENT INVENTORIES					3rd Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	2%	14%	54%	19%	11%	26%	38%	36%
COLD-FINISHED BARS	5%	13%	51%	20%	11%	11%	45%	44%
H & C-R SHEETS, STRIP	2%	13%	46%	26%	13%	24%	25%	51%
LIGHT PLATES	2%	10%	42%	29%	17%	30%	26%	44%
HEAVY PLATES	3%	8%	41%	24%	24%	31%	38%	31%
STRUCTURAL SHAPES	2%	10%	44%	32%	12%	31%	36%	33%
COPPER & BRASS	3%	24%	46%	21%	6%	16%	56%	28%
ALUMINUM	7%	24%	35%	24%	10%	7%	61%	32%

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR UNDERSCORED figures show how most respondents reported.

Are Your Inventories Adequate?

Buildup continues as companies prepare for a possible steel strike and a "boom" in late '59 and 1960. Third quarter outlook: Buyers foresee heavier stocks

METAL BUYERS are continuing to increase their inventories to carry them through the expected steel strike this summer. But, the question is, can they go far enough? Business is good now, and a sharp upturn in the fourth quarter and the first of 1960 is expected. If there is a strike, buyers who wait until it is over to order may run into trouble.

STEEL's quarterly survey of purchasing agents reveals 41 per cent have higher inventories than they did three months ago. Only 11 per cent reported stocks were lower, and 48 per cent said they were the same. All survey categories showed a rise in three to six month levels. Except for heavy plates, 60 to 90 day reserves increased. A substantial decline was recorded for most inventory levels of under 30 days.

• **Outlook Mixed**—Three months hence, 39 per cent of STEEL's respondents predict inventories will be up; 22 per cent say they'll be down; and another 39 per cent think they'll stay the same. Buyers of cold finished bars and hot and cold rolled sheets and strip are optimistic about their inventories. Heavy plate purchasers anticipate some troubles.

Some firms have had difficulty building reserves. They see a decline in the third quarter, although the seasonal slack in business is not expected to deplete heavy stocks substantially.

If there is no steel strike, stocks will reach their desired levels by mid-August. But many firms echo the position of an eastern tube company: "We will be caught short if there is a strike of any duration."

• **Delivery Problems** — The backlogs of steel companies are large. So problems are arising as deliveries become extended. Some difficulties were reported by 44 per cent of STEEL's respondents.

One out of four buyers had problems with plates. High on the trouble list were galvanized sheets (1 out of 5) and hot and cold rolled sheets (1 out of 8). Other items frequently mentioned were

galvanized and stainless sheets, structurals, tubing, and some alloys.

Mills report a slight decrease in new orders. A few customers realize they can't get on the books in many instances. But the leveling off has not been as great as the mills had expected.

Overstocks were reported by 6 per cent of the respondents. Mentioned were sheets, plates, and seamless tubing.

• **Nonferrous**—Copper, brass, and aluminum buyers' inventories have remained fairly stable, although there is some strike hedging on copper.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 127

Public construction projects, including a large volume of highway-work, are taking substantial tonnages of reinforcing steel. Mill backlogs are heavy, and they are striving to keep shipments current with delivery promises.

Reinforcing bar volume is bolstered in New England by several large projects, including 3500 tons for the foundation of the Prudential Tower, Boston, and an automatic post office at Providence, R. I., taking 1400 tons.

Bridge tonnage is slightly heavier.

Buying of highway mesh is below normal in New England. However, East Connecticut highways will take 1200 tons.

Contracts scheduled for early placement in the Pacific Northwest include: 2750 tons for Ice Harbor, 2000 tons for a Seattle garage, 1350 tons for an Atlas ballistic missile installation near Spokane.

Highway construction is active in Idaho, Washington, and Oregon.

Two dam jobs, Wanapum, involving 33,000 tons of reinforcing, and Cougar, calling for 1225 tons, are expected to be placed in June.

Steel Bars . . .

Bar Prices, Page 126

Some producers of commercial bars have a little tonnage open in their second quarter schedules. Others are fully sold out, not only on hot bars, but on cold finished and alloy as well.

Those makers who can still accept orders for June shipment anticipate no trouble filling the holes in their schedules. Most of them know what their regular customers' requirements are for June. They expect to get formal orders against set-aside tonnages before the end of this month.

Consumers are beginning to order for third quarter. So far, forward buying has been mainly by the larger users. July shipment is the dominant position, but some tonnage beyond that month has been placed.

Deliveries of hot bars to the converters are running a little behind promises. But the cold finishers are keeping current with their shipment commitments. They are still leaning on hot bar inventories to sustain production that's running 15 to 20 per cent above the first quarter rate. Books of the cold finishers are full for second quarter on the smaller sizes, under 2 in.

"We're doing a pretty good job on deliveries," a bar sales executive said last week. "We had to carry some April tonnage into May, but it was a small percentage of what we had booked. Unless we run into some unexpected operating

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problems, such as breakdowns, labor trouble, or transportation tieups, we should keep shipping on schedule."

Bar demand has been strong in all sectors of the market—automotive, converting, machinery, farm equipment, and railroad carbuilding. The service centers are specifying heavily for May and June delivery.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 127 & 128

SHEETS continue the most buoyant of the major steel products. All of the principal grades—hot and cold rolled, and galvanized—have long been sold out for the second quarter. Specifications against mill set-asides for June were filled in during early April as leadtime expired.

But there's still heavy pressure for tonnage. Customers who have had orders on mill books for months are seeking additional tonnage, apparently having underestimated their needs. Their current requirements are heavier than expected, and they are not building inventories to the extent anticipated.

• **Third Quarter Bookings**—Some makers now have on their books all the tonnage in the principal grades they can handle through July and August. That is indicated by requests for set-asides, with specifications to be entered later.

Generally, though, buyers are ordering cautiously for third quarter. Certainly there's no rush, even by those users who realize they'll have to get on mill books in the next few weeks if they expect third quarter delivery tonnage. They seem to be waiting until the last minute so as to get a better idea of what they'll need.

Even should there be no strike this summer, orders placed now for third quarter shipment will assure buyers of a more favorable position in mill schedules. Forward buying is chiefly being done by the larger consumers, some of whom are said to have enough steel in stock to weather a six or eight week strike.

• **See Slower Third Quarter**—"If there's no strike, the third quarter will certainly be on the low side," a Pittsburgh sales executive said last week. "But chances are we'll do a lot better than we did last summer. There's been a big improvement in consumption. Users haven't been able to get their inventories into the shape they've wanted."

Another maker says he is essentially current for April, but is not oversold for May or June. However, he feels it remains to be seen whether he'll stay on schedule. He is alert to the fact he can lose production because of breakdowns and labor trouble in advance of a general strike.

Demand for galvanized is stronger percentagewise than for any other flat rolled product. Cold rolled sheets are tighter than hot rolled. About the only grade still available for second quarter delivery is electrical sheets, and this isn't expected to be true for long.

• **Deliveries Stretch Out**—In the Midwest, deliveries are lengthening, hot rolled and galvanized sheets running five weeks behind schedules. Hot rolled delivery delays are explained by the fact cold rolled sheets, galvanized sheets, and strip-plates come off the same mills as

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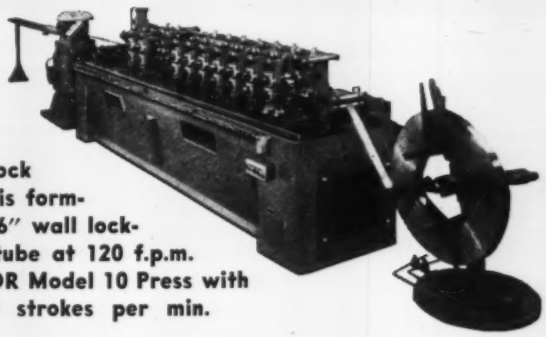
ARDCOR HIGH PRODUCTION ROLL FORMING MACHINE FOR ALUMINUM SHAPES



This Model SF Lock Seam Tube Mill is forming ⅝" O.D., .016" wall lock-seam aluminum tube at 120 f.p.m. Cutoff is ARDCOR Model 10 Press with 1½" stroke, 60 strokes per min.

The new small Model SF ARDCOR Machine features: High production speeds; spindles 1.5"; new style rugged base with tool compartment and slanted front recessed for better operator stance; special narrow side roll stands with close 10" horizontal centers; fixed spur gears; quiet running all V-belt drive; low voltage protection. Basic machine readily converted to a Cold Roll Forming Machine.

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do hot rolled. The more highly finished products are favored in rolling schedules, so that the squeeze falls on hot rolled.

Complaints of slow deliveries are hitting the mills with increasing frequency. More consumers realize they are not building inventories at the pace they had planned. They are chewing up steel much faster than they had anticipated, and their fears of being caught with short supplies this summer are mounting.

Wire . . .

Wire Prices, Pages 128 & 129

Wiremakers have been booking substantial business in recent weeks, but they anticipate no trouble meeting shipment promises the rest of this quarter. With few exceptions, they expect their commitments will be met on both manufacturers' grades and merchant trade items.

Mills are heavily booked on heading and high carbon spring wire. However, some late orders can still be worked into second quarter schedules. Stainless wire can be placed with some producers for June shipment.

Demand for merchant products is seasonally heavier. However, buying was late developing in some areas and volume is reported hardly better than 50 per cent of normal in nails and fencing. To some extent, this is attributable to heavy imports of these items.

Some third quarter orders are appearing, but pressure is only moderate.

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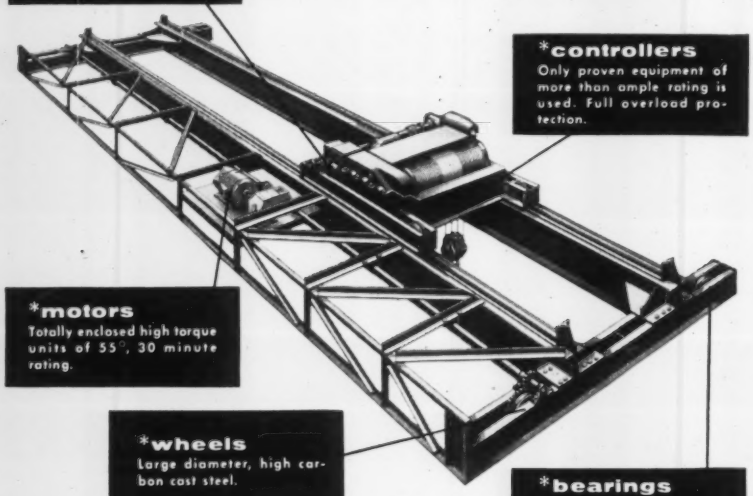
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Tubular Goods . . .

Tubular Goods Prices, Page 130

Gas transmission firms, given the green light late last year when the Memphis rate decision was overturned by the U. S. Supreme Court, are beginning to move their expansion programs into high gear. Within the last week or so, three Houston-based companies announced programs costing $135.2 million.

Costal Transmission Corp. will build a $6.2 million addition to its system, extending from Texas to Florida. It will include compressor and pipeline facilities.

Transcontinental Gas Pipe Line Corp. plans a two year program which will involve expenditures of $79 million. Proposed facilities will increase the supply of natural gas for New York and other cities along its system by 13 per cent.

Western Natural Gas Co. plans a $50 million system in northeast British Columbia to tap gas areas recently opened up. A 170 mile pipeline is included.

Pacific Lighting Corp., San Francisco, will spend almost half of its record $95 million construction budget of 1959 for additional transmission facilities to bring gas into California from out of the state.

Other favorable oil industry news for the steel industry: The Hughes Tool Co. reports its weekly rotary rig count shows U. S. drilling operations at a new 1959 peak for the third week in a row. The survey showed 2081 rotaries in operation vs. 2057 the previous week.

Stainless steel tubing capacity at Ellwood Works, National Tube Div., U. S. Steel Corp., at Ellwood City, Pa., will be nearly doubled. Two new buildings will be erected

to house processing, finishing, and testing equipment. Included will be a controlled atmosphere annealing furnace, surface conditioning equipment, tube reducing and bar drawing facilities, cleaning and descaling equipment; also, straighteners, abrasive cutoffs, and profiling machines, and testing equipment of the most modern types.

Despite a tremendous first half surge in demand for oil country tubing and casing, sales of drill pipe have remained sluggish. Orders are up only a few percentage points. Producers think buyers' inventories were underestimated. In any case, they say foreign competition isn't much of a factor in the drill pipe market.

If a strike is called this summer, steelmakers think fourth quarter demand will be strong enough to sustain production at 80 per cent of capacity.

Pig Iron . . .

Pig Iron Prices, Page 131

The mild upturn in merchant pig iron buying continues. Shipments during April were the largest for any month so far this year and are expected to go still higher in May and June.

Foundries have increased operations with most of them operating five days a week. They are not buying any substantial tonnages for stockpiling and apparently are not concerned about the possibility of higher prices this summer. A general round of wage increases may follow the steel contract negotiations. Actually, consumers figure that with the low priced foreign iron being offered, domestic producers will move slowly in increasing their prices, even though labor costs may be higher.

Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., blew in its second blast furnace at Tonawanda, N. Y., leaving only a Hanna furnace idle in the Buffalo district. A considerable portion of the output of Wickwire Spencer's newly lighted stack is expected to go to the merchant iron trade because the mill's open hearth operations are below capacity.

Wickwire Spencer and other merchant iron producers likely will be shipping a substantial volume of iron on the Great Lakes during the next two months.

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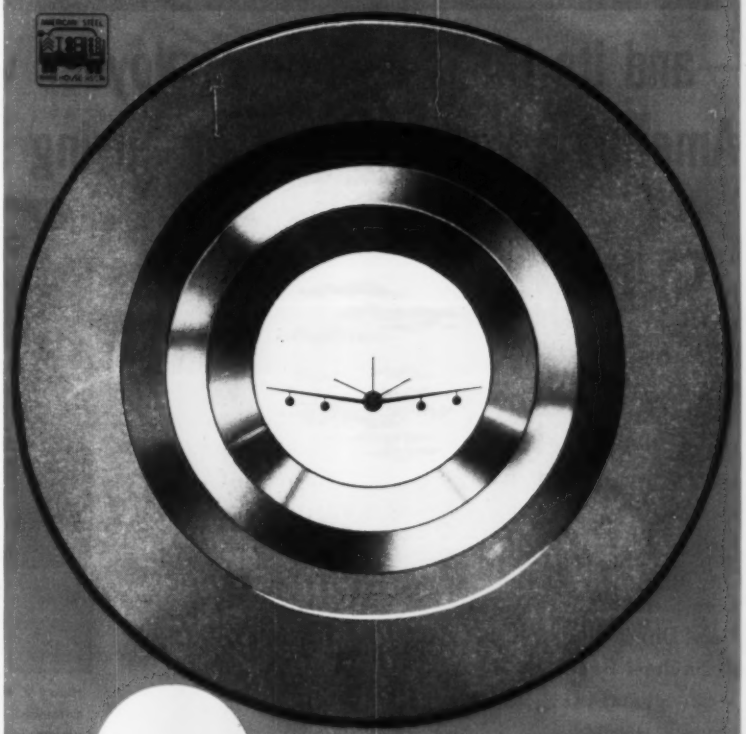

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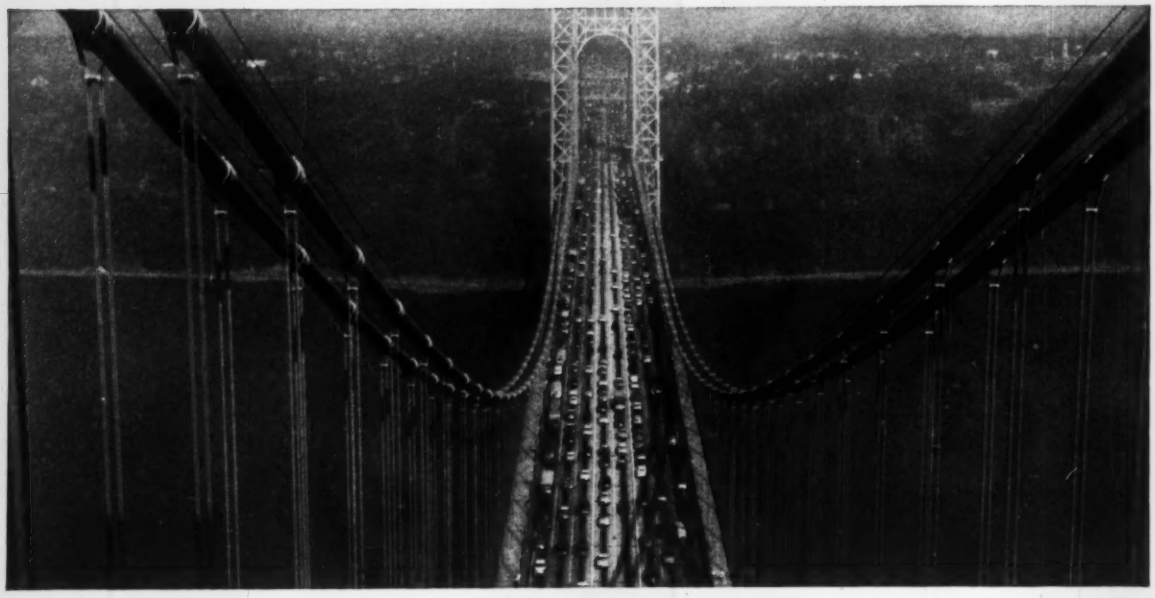

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STEEL
The Metalworking Weekly

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Rails, Cars . . .

Track Material Prices, Page 129

Freight car orders in March totaled 10,795 units vs. 1806 in February and 193 in March, 1958, reports the American Railway Car Institute and the Association of American Railroads.

Order backlogs as of Apr. 1 amounted to 35,487 cars, with 21,798 on order in railroad shops, and 13,687 in commercial shops. This compares with 28,789 cars on order and undelivered on Mar. 1, and 38,027 a year ago.

Deliveries totaled 2797 cars in March vs. 2486 in February and 5906 in March last year.

The Southern Railways closed bids on 1500 freight cars, comprising gondolas, covered hoppers, and boxcars. An eastern railroad is expected to place 1000 boxcars shortly.

Canada . . .

Production of iron and steel in Canada is expanding in keeping with rising demand. February pig iron output was 282,642 net tons (86.7 per cent of capacity) vs. 299,284 tons (82.9 per cent) in January, and 232,564 tons (71.3 per cent) in February, 1958.

Stocks of pig iron at the end of February amounted to 248,322 tons vs. 337,387 at the end of January, and 241,964 at the end of February a year ago.

Output of steel ingots and steel for castings in February was 436,932 net tons (90.3 per cent of capacity). That compared with 461,113 tons (86.1 per cent) in January, and 375,267 tons (77.6 per cent) in February, 1958.

Structural Shapes . . .

Structural Shape Prices, Page 126

The first upturn in structural steel shipments in six months was recorded in March, reports the American Institute of Steel Construction Inc. Shipments in the month totaled 260,490 tons, up 21 per cent from the previous month. But shipments of 700,877 tons in the first quarter were 25 per cent below the total for the same period last year.

March bookings of 254,773 tons represented a drop of 13 per cent from February's total, but they were up almost 59,000 tons from bookings a year ago. In the first quarter, bookings amounted to 784,924 tons, 44 per cent more than in the same period of 1958.

Order backlogs as of Mar. 31 totaled 1,873,422 tons. Of this total, 1,146,149 tons are scheduled for fabrication during the four months ending July 31.

Considerable new work is being figured, but present demand for structurals is off. This, in part, reflects uncertainties arising from the forthcoming steel wage negotiations. Bridgework is fairly well sustained, but inquiry for industrial projects has eased further, and there is less commercial work up for figures than was the case a few weeks ago.

New construction involving substantial tonnages of structurals is developing in the Pacific Northwest. Fabricators say the tonnage involved, if placed, will be sufficient to keep them busy the rest of this year. Three large power projects to be bid in May and June involve more than 5000 tons of shapes and plates. Military installations call for sizable tonnages.

Most structural mills have little tonnage open for second quarter shipment. This is particularly true of wide flange sections. Some mills can still accept standard shape tonnage for shipment before June 30.

Fabricators are trying to build inventories, but, judging from the rising pressure for steel, it looks as though most of them have underestimated their first half requirements. Some shops, notably those in New England, are estimating a little more tonnage, exclusive of bridges.

More shops are quoting firmer prices.

A $34 million bond issue will be offered in June to finance construction of the long planned Benicia-Martinez Bridge over San Francisco Bay. It will replace ferry operations. Recently, a huge California freeway construction program went to the state assembly for approval following unanimous senate approval. It calls for 12,250 miles of freeways by 1980.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4400 tons, reconstruction and enlargement, office building, Guarantee Trust Co. of New York, 44th Street and Fifth Avenue, New York, to Bethlehem Steel Co., Bethlehem, Pa.

2200 tons, bridge superstructure, river spans, steel truss, and ramps, Wyandotte County, Kans., to Kansas City Structural Steel Co., Kansas City, Kans.

1165 tons, mechanized post office and mail processing building, Providence, R. I., to A. O. Wilson Structural Co., Cambridge, Mass.; Gilbane Building Corp., Providence, general contractor.

1140 tons, maintenance hangar and operations building, Naval air station, Meriden, Miss., to Decatur Iron & Steel Co., Decatur, Ala.; A. B. Newton & Son, Vidalia, Ga., general contractor; 65 tons, reinforcing bars to Industrial Materials Co., Meriden.

770 tons, three state bridges, Chelmsford, Mass., to City Iron Works, Wethersfield, Conn.; Central Construction Co., Lawrence, Mass., general contractor; 90 tons, steel piles, to Bethlehem Steel Co., Bethlehem, Pa.

175 tons, state highway bridge, Thomaston, Conn., to Groisser & Shlager Iron Works, Somerville, Mass.

125 tons, garage, Coca-Cola Co., New York, to Dreier Structural Steel Co., Inc., Long Island City, N. Y.

110 tons, Idaho underpass, to Gate City Steel Inc., Boise, Idaho.

100 tons, also 35 tons of reinforcing, sanctuary unit, Temple de Hirsch, Seattle to Isaacson Iron Works, Seattle; John H. Sellen Construction Co., Seattle, general contractor, low at $589,420.

100 tons, building, National Shawmut Bank, Boston, to A. O. Wilson Structural Co., Cambridge, Mass.; George B. H. Macomber Co., Boston, general contractor.

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STRUCTURAL STEEL PENDING

2000 tons, state bridgework, Bronx, New York; bids closed.

1100 tons, three state bridges, Worcester, Mass.; the Barletta Co. Inc., Roslindale, Mass., low on the general contract.

865 tons, four composite, multiple span, wide flange beam bridges, Waterbury, Vt.; Lane Construction Corp., Meriden, Conn., is low on the general contract; also required, 385 tons of reinforcing bars.

765 tons, administration building and viaduct, George Washington Bridge approach, New York, White Plains Iron Works, Peekskill, N. Y., low on fabrication. There were 16 direct bids by fabricators.

725 tons, power project, Clear, Alaska; Lewis Riffel Inc., Portland, Oreg., apparently low at $199,779 to U. S. Engineer, Seattle.

650 tons, Atlas ballistic missile project, near Spokane, Wash.; Wells-Benz Contractors, San Diego, Calif., low at $5,314,872, of 25 bidders, to the U. S. Engineer.

500 tons, St. Joseph's Convent, Rockville Center, N. Y.

456 tons, state bridgework, Chemung County, N. Y.; bids closed.

402 tons, state bridgework, Erie County, N. Y.; bids closed.

395 tons, state bridgework, Cape May County, N. J., bids May 13; 161 tons of reinforcing bars also required.

200 tons, one 3-span rolled beam bridge, Naugatuck River, Litchfield-Harwinton, Conn.; Charter Oak Construction Co., Hartford, Conn., is low on the general contract; also required, 70 tons of reinforcing bars.

200 tons or more, switchyard facilities, Rocky Reach Dam project; Delta Star Div., H. K. Porter Company, Boston, low at $139,817, for steel, to Chelan County P.U.D., Wenatchee, Wash.

100 tons or more, tower steel; bids to Bonneville Power Administration, Portland, Oreg., May 12.

100 tons or more, 38 prefabricated armory buildings for various Alaskan sites; Edward J. Bailey & Co., Philadelphia, and Manson-Osberg Co., Seattle, joint low to the U. S. Engineer at $661,650.

100 tons or more, Montana state railroad overpasses, Silver Bow County, Peter Kiewit Sons Co., low at $1,360,740.

100 tons or more, 50-ton gantry crane, East Waterway Terminal, Seattle; plans approved; bids soon to the Port of Seattle.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1400 tons, mechanized post office and mail processing building, Providence, R. I., to Plantations Steel Co., Providence; Gilbane Building Corp., Providence, is general contractor.

550 tons, three state highway structures, Chelmsford, Mass., to Truscon Steel Div., Republic Steel Corp., Boston; Central Construction Co., Lawrence, Mass., general contractor.

375 tons, Rockwood Manor, Spokane, Wash., to Union Iron Works, Spokane; H. Halvorson Inc., Yardley, Wash., general contractor.

130 tons, highway overpass, Shelby, Mont. (state project) to Bethlehem Pacific Coast Steel Corp., Seattle.

95 tons, high school, Bellevue, Wash., to J. D. English Steel Co., Tacoma, Wash.; Baugh Construction Co., Seattle, general contractor.

REINFORCING BARS PENDING

33,000 tons, Wanapum Dam, Columbia River; bids to Grant County P.U.D., Ephrata, Wash., advanced to May 15 from May 8.

1350 tons, Atlas ballistic missile project, Spokane, Wash.; Wells-Benz Contractors, San Diego, Calif., low at $5,314,872.

510 tons, Washington State freeway overspans, Seattle; McRae Bros. Construction Co., Seattle, low bidder and awarded at $594,506.

480 tons, electrical installation, Niagara switchyard, Lewiston, N. Y.; bids May 12, New York State Power Authority, New York; also erection of 1275 tons, switchyard structures and terminal towers; 230 tons, wrought and cast iron pipe and fittings.

425 tons, four girder bridges, Pierce County, Wash. (state projects); bids to Olympia, Wash., May 12.

385 tons, state highway structures, composite wide flange beam bridges, Waterbury, Vt.; bids Apr. 17 to Montpelier, Vt.

310 tons, flood control project, Malden-Melrose, Mass.

300 tons, Washington State, two bridges, King County; bids to Olympia, Wash., Apr. 28.

250 tons, transmission buildings, Clear (Alaska) Base; general contract to Baker & Ford, Bellingham, Wash., low at $5,036,174.

200 tons, Washington State highway bridge, King County; general contract to Northwest Construction Co., Seattle, low at $626,006.

180 tons, Montana State overpass, Silver Bow County; bids to Helena, Mont., Apr. 22.

161 tons, state bridgework, Cape May County, N. J., bids May 13; 395 tons of structural steel also required.

150 tons, Washington State, two spans, Yakima County; bids to Olympia, Wash., Apr. 28.

100 tons or more, warehouse and cold storage, Wenatchee, Wash.; Sceva Construction Co., Spokane, Wash., low at $479,355.

100 tons or more, three ordnance storage magazines, Glasgow (Mont.) Air Base; Sletten Construction Co., Great Falls, Mont., low at $626,861, to U. S. Engineer, Walla Walla, Wash.

50 tons, Washington State, highway bridge, Klickitat County; general contract to Hans Skov Construction Co., Yakima, Wash., low at $52,000.

PLATES . . .

PLATES PLACED

500 tons, high and medium tensile, two contracts, Naval shipyard, Philadelphia, to Colorado Fuel & Iron Corp., Wilmington, Del.

200 tons or more, Seattle's Tolt River Dam, subcontract to Wyatt & Kipper, Seattle.

175 tons, high tensile, hull, Naval shipyard, Philadelphia, to Lukens Steel Co., Coatesville, Pa.

PLATES PENDING

1000 tons or more, storage facilities, Clear, Alaska, military installation; bids in.

505 tons, including sheets, Raritan Arsenal, Metuchen, N. J.; bids May 13.

500 tons or more, Atlas ballistic project, near Spokane, Wash.; general bids in.

125 tons, carbon, General Stores Supply Office, Navy, Philadelphia; bids May 4.

PIPE . . .

CAST IRON PIPE PLACED

100 tons, various sizes, Chehalis, Centralia, and Ellensburg, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

CAST IRON PIPE PENDING

150 tons, 5420 ft of 12 in.; bids in to King County District No. 68, Seattle.

85 tons, 4 to 12 in., Wanapum Dam, Columbia River; bids May 15 to P.U.D., Ephrata, Wash.

STEEL PIPE PENDING

35,000 tons, 41 miles of municipal waterline, Birmingham; bids May 5.

RAILS, CARS . . .

RAILROAD CARS PLACED

Monon, forty, 70 ton hoppercars, to the Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Trailer Train Co., three hundred 85 ft piggyback flatcars; bids asked.

Seaboard Air Line, 1000 boxcars; award expected shortly.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

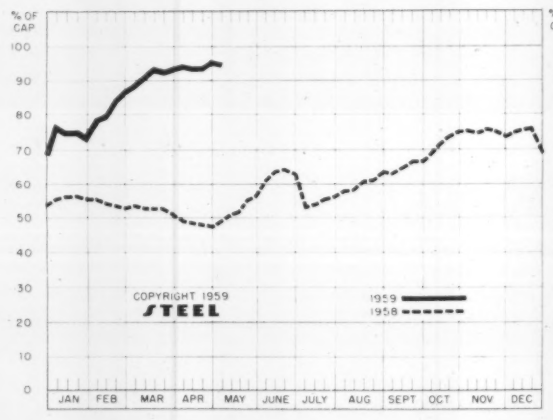
	Week Ended May 3	Change	Same 1958	Week 1957
Pittsburgh	95.5	+ 3.5*	49.5	90.5
Chicago	96.5	+ 2*	55	88.5
Eastern	96	0	48	96
Youngstown	92	— 2	42	86
Wheeling	91	— 4	57.5	90
Cleveland	98	+ 4*	29.5	85.5
Buffalo	102.5	0	34.5	95
Birmingham	93	0	60	95.5
Cincinnati	99	+ 2.5	29	60
St. Louis	106.5	+ 1.5*	68.5	90
Detroit	99	+ 1.5*	12	92
Western	95	+ 1	67	100
National Rate	94.5	— 0.5	48	88.5

INGOT PRODUCTION‡

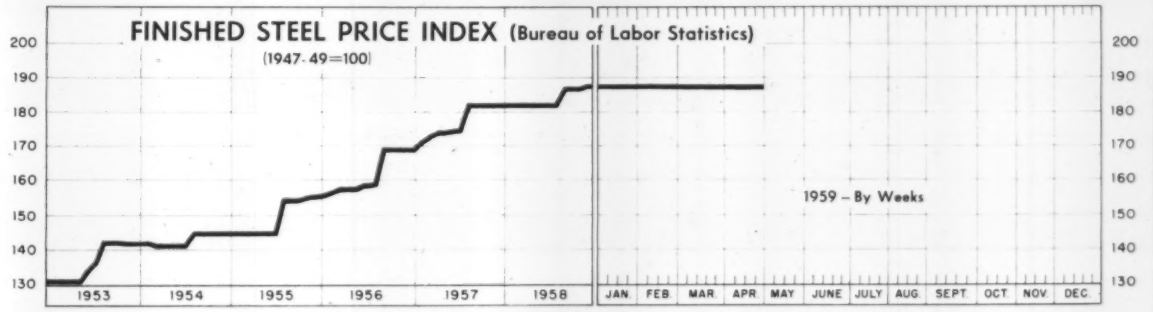
	Week Ended May 3	Week Ago	Month Ago	Year Ago
INDEX (1947-49 =100)	166.5†	164.7	164.2	80.2
NET TONS (In thousands)	2,674†	2,646	2,638	1,289

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Apr. 28, 1959	Week Ago	Month Ago	March Avg.	Year Ago
186.7	186.7	186.7	186.7	181.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Apr. 28

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.615
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.658
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.480
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.905
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.253
		Pipe, Line (100 ft)	199.53
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.900
Tubing, Mechanical, Carbon (100 ft)	27.005	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.665
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800	Nails, Wire, 8d Common	9.825
		Wire, Barbed (80-rod spool)	8.722
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	April 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$113.70
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	34.33	34.67	37.00	31.83	26.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	April 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.405
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.65
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods 7/32-9/16" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	April 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$36.50	$36.50	$36.50	$31.50	$26.50
No. 1 Heavy Melt, E. Pa.	33.50	33.50	36.00	34.50	22.00
No. 1 Heavy Melt, Chicago	33.00	34.00	38.50	29.50	29.50
No. 1 Heavy Melt, Valley	35.50	37.50	40.50	32.50	28.50
No. 1 Heavy Melt, Cleve.	33.50	35.00	36.50	29.50	25.50
No. 1 Heavy Melt, Buffalo	32.50	34.50	39.50	26.50	25.50
Rails, Rerolling, Chicago	57.50	57.50	60.50	48.50	39.50
No. 1 Cast, Chicago	45.50	44.50	47.50	38.50	38.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

Steel Prices

Mill prices as reported to STEEL, April 29, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 127; footnotes, page 129.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)
Detroit S41 ..... $82.00
Economy,Pa. B14 ..... 82.00
Farrell,Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B2 ..... 80.00
Lackawanna,N.Y. B2 .. 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 80.00
S.Chicago,Ill. R2, U5 .. 80.00
S.Duquesne,Pa. U5 ..... 80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ..... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3 .. 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 .. 99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. G8 ..... 99.50
Seattle B3 ..... 109.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14 .. 99.50
S.Duquesne,Pa. U5 .... 99.50
S.SanFrancisco B3 .... 109.00
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 .. $119.00
Bridgeport,Conn. C32 .. 119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 .... 119.00
Conshohocken,Pa. A3 .. 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 .... 119.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 .... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 .... 119.00
Johnstown,Pa. B2 .... 119.00
Lackawanna,N.Y. B2 .. 119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 .... 119.00
Massillon,O. R2 .... 119.00
Midland,Pa. C18 .... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 .... 119.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14 .. 119.00
S.Duquesne,Pa. U5 .... 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 .. 122.50
Warren,O. C17 ..... 122.50

SKELP
Aliquippa,Pa. J5 ..... 5.05
Munhall,Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O. R2 ..... 5.05
Youngstown R2, U5 .... 5.05

WIRE RODS
AlabamaCity,Ala. R2 .. 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 .... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1 .. 6.40
Johnstown,Pa. B2 .... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 .... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 .... 6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 .. 6.40
Pittsburg,Calif. C11 .... 7.20
Portsmouth,O. P12 .... 6.40
Roebling,N.J. R5 ..... 6.50
S.Chicago,Ill. R2, W14 .. 6.40
SparrowsPoint,Md. B2 .. 6.50
Sterling,Ill.(1) N15 .... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 .... 6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 .. 5.50
Aliquippa,Pa. J5 ..... 5.50
Atlanta A11 ..... 5.70
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 .... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1 .. 5.50
Johnstown,Pa. B2 .... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 .... 5.60
Lackawanna,N.Y. B2 .. 5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 .... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 .... 5.55
Portland,Oreg. O4 ..... 6.25
Seattle B3 ..... 6.25
S.Chicago,Ill. U5, W14 .. 5.50
S.SanFrancisco B3 .... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 .... 6.20
Weirton,W.Va. W6 .... 5.50

Wide Flange
Bethlehem,Pa. B2 .... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 .... 6.45
IndianaHarbor,Ind. I-2 .. 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 .... 5.55
S.Chicago,Ill. U5 ..... 5.50
Sterling,Ill. N15 ..... 5.50
Weirton,W.Va. W6 .... 5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5, W14 .. 6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 .... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 .... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1 .. 8.05
Johnstown,Pa. B2 .... 8.10
KansasCity,Mo. S5 .... 8.15
Lackawanna,N.Y. B2 .. 8.10
LosAngeles B3 ..... 8.75
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago,Ill. U5, W14 .. 8.05
S.SanFrancisco B3 .... 8.70
Sterling,Ill. N15 ..... 7.75
Struthers,O. Y1 ..... 8.05

H.S., L.A., Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 .... 8.05
Lackawanna,N.Y. B2 .. 8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05
Sterling,Ill. N15 ..... 7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 .... 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 .. 5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 .... 6.50
Lackawanna,N.Y. B2 .. 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 .. 6.50
Weirton,W.Va. W6 .... 6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 .. 5.30
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 .. 5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 .. 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity,Ill. G4 .... 5.40
Harrisburg,Pa. P4 .... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 .. 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 .. 5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 .... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14 .. 5.30
SparrowsPoint,Md. B2 .. 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 .... 5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 .... 5.30
Youngstown (27) R2 .. 5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .... 7.05
Fontana,Calif. K1 ..... 7.85
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 .. 7.05

PLATES, Wrought Iron
Economy,Pa. B14 .... 13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ..... 7.95
Ashland,Ky. A10 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 ..... 7.95
Conshohocken,Pa. A3 .. 7.95
Economy,Pa. B14 ..... 7.95
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif.(30) K1 .. 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 .. 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14 .. 7.95
SparrowsPoint,Md. B2 .. 7.95
Warren,O. R2 ..... 7.95
Youngstown U5, Y1 .... 7.95

PLATES, Alloy
Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 .... 7.50
Coatesville,Pa. L7 ..... 7.50
Economy,Pa. B14 ..... 7.50
Farrell,Pa. S3 ..... 7.50
Fontana, Calif. K1 .... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 .... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B3 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5 W14 .. 7.50
SparrowsPoint,Md. B2 .. 7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES
Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 .. 6.375
IndHarbor,Ind. I-2 .. 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
S.Chicago,Ill. U5 .... 6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 .. 5.55
Ashland l.c.l.(15) A10 .. 6.05
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 ..... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 .. 5.675
Aliquippa,Pa. (9) J5 .. 5.675
Alton,Ill. L1 ..... 5.875
Atlanta(9) A11 ..... 5.875
Bessemer,Ala.(9) T2 .. 5.675
Birmingham(9) C15 .. 5.675
Buffalo(9) R2 ..... 5.675
Canton,O. (23) R2 .... 6.15
Clairton,Pa.(9) U5 .. 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 .... 5.675
Emeryville,Calif. J7 .. 6.425
Fairfield,Ala.(9) T2 .. 5.675
Fairless,Pa.(9) U5 .... 5.825
Fontana,Calif.(9) K1 .. 6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1 .. 5.675
Johnstown,Pa.(9) B2 .. 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 .... 5.675
LosAngeles(9) B3 .... 6.375
Massillon,O. (23) R2 .. 6.15
Midland,Pa.(23) C18 .. 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 .. 6.125
Niles,Calif. P1 ..... 6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 .. 6.025
Pittsburg,Calif.(9) C11 .. 6.375
Pittsburgh(9) J5 .... 5.675
Portland,Oreg. O4 .... 6.425
Riverdale,Ill.(9) A1 .. 5.675
Seattle B3, N14 ..... 6.425
S.Ch'c'go(9)R2,U5,W14 .. 5.675
S.Duquesne,Pa.(9) U5 .. 5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15 .. 5.675
Sterling,Ill.(9) N15 .... 5.775
Struthers,O.(9) Y1 .... 5.675
Tonawanda,N.Y. B12 .. 5.675
Torrance,Calif.(9) C11 .. 6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5 .. 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 .. 6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 .... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 ..... 6.725
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 .... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1 .. 6.725
Johnstown,Pa. B2 ..... 6.725
KansasCity,Mo. S5 .... 6.975
Lackawanna,N.Y. B2 .. 6.725
LosAngeles B3 ..... 7.775
Lowellville,O. S3 ..... 6.725
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 .... 6.725
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14 .. 6.725
S.Duquesne,Pa. U5 .... 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 ..... 8.30
Clairton,Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 .... 9.00
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 .... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 .... 8.55
Lackawanna,N.Y. B2 .. 8.30
LosAngeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. R2, W14 .. 8.30
S.Duquesne,Pa. U5 .... 8.30
S.SanFrancisco B3 .... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 .. 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 .... 5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 .... 5.675
Tonawanda,N.Y. B12 .. 5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 .. 6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 .... 6.425
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 .... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C.F. Loaded (Including loaded extra)
Carbon
LosAngeles P2, S30 .. 11.75*
Alloy
Ambridge,Pa. W18 .. 10.175
BeaverFalls,Pa. M12 .. 10.175
Camden,N.J. P13 .... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 .... 10.35
SpringCity,Pa. K3 .... 10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .... 7.65
BeaverFalls,Pa. M12,R2 .. 7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 .... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 .. 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 .... 7.65
Hammond,Ind. J5, L2 .. 7.65
Hartford,Conn. R2 .... 8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 .... 9.10
LosAngeles(49) P2, R2 .. 9.10
Mansfield,Mass. B2 .... 8.20
Massillon,O. R2, R8 .... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 .. 7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 .... 7.90
Putnam,Conn. W18 .... 8.20
Readville,Mass. C14 .... 8.20
S.Chicago,Ill. W14 .... 7.65
SpringCity,Pa. K3 .... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Waukegan,Ill. A7 ..... 7.65
Willmantic,Conn. J5 .... 8.15
Youngstown F3, Y1 .... 7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 .. 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .... 9.025
BeaverFalls,Pa.M12,R2 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 .. 9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 9.025
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 .... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa.. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 .. 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 .... 9.025
Hammond,Ind. J5, L2 .. 9.025
Hartford,Conn. R2 .... 9.325
Harvey, Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 .. 9.025
LosAngeles P2, S30 .. 11.00
Mansfield,Mass. B5 .... 9.325
Massillon,O. R2, R8 .... 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 .... 9.225
S.Chicago,Ill. W14 .... 9.025
SpringCity,Pa. K3 .... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 9.025
Willmantic,Conn. J5 .... 9.325
Worcester,Mass. A7 .... 9.325
Youngstown F3, Y1 .... 9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 ....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ...5.925
Kokomo,Ind. C16 ....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 .5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ....6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated; To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 ....7.35
SandSprings,Okla. S5 ..7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt) B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt)L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa. (3) F5 ...5.575
Franklin,Pa. (4)F5 ...5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ...5.575
Tonawanda(4) B12 ...6.10

SHEETS

SHEETS, Hot-rolled Steel (18 Gage and Heavier)

Lackawanna,N.Y. B2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 ....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 ....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 ....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R.(14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 ....7.525
Cleveland J5, R2 ....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 ....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14..7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ...7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 .6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 .6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2.6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 ....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 ....9.275
Cleveland J5, R2 ....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ...9.275
Youngstown Y1 ..... 9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ...6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ....6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ...7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ....6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) B2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.50
Youngstown J5 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 ....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 ....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W. Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel Div., U. S. Steel Corp.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.
O4 Oregon Steel Mills

P1 PacificStates Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp., Sub. of Barium Steel Corp.
P5 Pilgrin Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain&Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.825
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.40
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.40
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5, Y1	8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2, Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn Mich. S3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Evanston,Ill. M22	7.525
Farrell Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles C1, S41	9.30
McKeesport,Pa. E10	7.525
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.55
Cleveland A7	15.55
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.55
Indianapolis S41	15.70
LosAngeles S41	17.75
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.85
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. S3	10.80
Dover,O. G6	10.80
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	...	18.85	22.95	27.80
Buffalo W12	...	18.85	....	....
Fostoria,O. S1	...	19.05	22.15	....
FranklinPark,Ill. T6	...	19.20	23.30	28.15
Harrison,N.J. C18	...	18.85	22.95	27.80
NewYork W3	...	18.85	22.95	27.80
Palmer,Mass. W12	...	18.85	....	....
Trenton,N.J. R5	...	18.85	22.95	27.80
Worcester,Mass. A7, T6	...	18.85	22.95	27.80
Youngstown S41	...	19.20	23.30	28.15

Weirton,W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
McKeesport,Pa. E10	7.50*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown S41	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)			
IndianaHarbor Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5	10.50	10.75
Fontana,Calif. K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.,Calif. C11	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va. W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg Calif. C11	8.85
SparrowsPoint,Md. B2	8.20
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	..	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville,Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	13.40
KansasCity,Mo. U3	12.90
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	13.40
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5, U3	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W2	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5, U3	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville,Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	16.55
Jacksonville,Fla. M8	16.65
Johnstown Pa. B2	16.30
KansasCity,Mo. S5	16.55
Kokomo Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	16.30
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	17.15
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
KansasCity,Mo. U3	13.70
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill A7	173
KansasCity, Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt. Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7 ..$10.30

NAILS, Cut (100 lb keg) To Distributors (33)

Wheeling,W.Va. W10 ..$10.10

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
Sparrows Pt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)

Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville,Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago,Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.54
Atlanta A11	10.70
Bartonville,Ill. K4	9.64
Buffalo W12	10 60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.26
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill. K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9 59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
PittsburgCalif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt. Md. B2	10.75
Sterling,Ill.(37) N15	9.59

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	21
Crawfordsville,Ind. M8	2.14
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet Ill. A7	212
KansasCity,Mo. S5	217
Kokomo Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2.	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	.193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	212†
Rankin,Pa. A7	193†
S Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
St'ling(37) N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage)

	An'ld Galv.
Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325§
Atlanta(48)A11	9.10 9.775§
Bartonville(48) K4	9.10 9.80
Buffalo W12	9.00 9.55†
Cleveland A7	9.00 ....
Crawfordsville M8	9.10 9.80‡‡
Donora,Pa. A7	9.00 9.55†
Duluth A7	9.00 9.55†
Fairfield T2	9.00 9.55†
Houston(48) S5	9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80‡‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	9.00 9.55†
Kans.City(48) S5	9.25 9.80**
Kokomo(48) S16	9.10 9.65†
LosAngeles B3	9.95 10.625§
Monessen(48) P7	8.65 9.35§
Palmer,Mass. W12	9.30 9.85†
Pitts.,Calif. C11	9.95 10.50†
Rankin,Pa. A7	9.00 9.55†
S Chicago R2	9.00 9.55**
S.SanFran. C10	9.95 10.50**
Spar'wsPt.(48)B2	9.10 9.775§
St'ling(1)(48)N15	9.00 9.70§§
Struthers,O. Y1	9.00 9.65‡
Worcester,Mass.A7	9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. ††Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0
Longer than 6 in.	37.0
⅝ in., 3 in. & shorter	47.0
3¼ in. thru 6 in.	40.0
Longer than 6 in.	31.0
¾ in. thru 1 in.:	
6 in. and shorter	37.0
Longer than 6 in.	31.0
1⅛ in. and larger:	
All lengths	31.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0

Carriage Bolts

Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

Lag, Plow, Tap, Blank Step, Elevator, Tire, and Fitting Up Bolts

½ in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

High Tensile Structural Bolts (Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated, Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam	50.0
¾ in. diam	47.0
⅞ and 1 in. diam.	43.0
1⅛ and 1¼ in. diam	34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:	
¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
¾ in. and smaller	62.0
⅞ in. to 1½ in. incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
⅞ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
⅝ in. and smaller	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
⅝ in. and smaller	35.0
¾, ⅞, and 1 in.	16.0
Longer than 6 in.:	
⅝ in. and smaller	3.0
¾, ⅞, and 1 in.	+11.0
High Carbon, Heat Treated:	
6 in. and shorter:	
⅝ in. and smaller	20.0
¾, ⅞, and 1 in.	+ 5.0
Longer than 6 in.:	
⅝ in. and smaller	+19.0
¾, ⅞, and 1 in.	+39.0
Flat Head Cap Screws:	
¾ in. and smaller, 6 in. and shorter	+85.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam:	
6 in. and shorter	+ 5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.85 and smaller by 6 in. and shorter: 15.0%.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2¾	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Galv*		Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	2.5	+24	+10.5	+34	+21.5	+43	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+5.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.75	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company, Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates: Carbon Base 5%	10%	15%	20%	Sheets: Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base: Cold Rolled 10%	Both Sides
Copper*	$36.20	$43.15

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.505	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa. deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	10.07	11.12	11.92	53.50	12.17	10.19	13.30 #	15.64	10.64	10.27	11.95
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.00	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.20	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[3]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.60	16.25	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[3]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; # net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill. Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Curtner, Calif., $185; Canon City, Colo., $183.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Bilmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$10.75-11.00*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian 91.5c-96.5c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00†
48% 2.8:1	38.00-40.00†
48% no ratio	29.00-31.00†

South African Transvaal

44% no ratio	19.75-21.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00†

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe: Minimum trucklots, freight allowed east of Mississippi River:	
100 mesh, 100 lb bags	11.25
100 mesh, 100 lb pails	9.10‡
40 mesh, 100 lb bags	8.10††
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flake (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-98.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh	
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	*34.50-51.00†*
Bronze, 5000-lb lots	*52.40-56.40†*
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	*53.00-57.30†*
Phosphor-Copper, 5000-lb lots	*64.80*
Copper (atomized) 5000-lb lots	*45.30*
Solder	7.00*
Stainless Steel, 304	$0.89
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten: Carbon reduced, 98.8% min, minus 65 mesh	Dollars nom.**
1000 lb	2.80
less 1000 lb	2.95
Chromium, electrolytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore. ††Welding grade.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5⅛	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.31
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens: New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.40	$5.40	$5.30	$5.75
Bar Size Angles	5.10	5.10	5.00	5.43
Structural Angles	5.10	5.10	4.90	5.43
I-Beams	5.11	5.11	5.01	5.45
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	*6.20*	*6.15*	*6.05*	*6.51*
Sheets, H.R.	*8.30*	*8.30*	*8.30*	*8.60*
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.55	6.55	6.55	6.90
Merchant Bars			*5.20*	*5.65*
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5	5.09	6.22	6.04	6.34
Bright Common Wire Nails (§)	*7.65*	*7.65*	*7.65*	*7.95*

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.

Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies)	25.00

Cents per lb, f.o.b. tank cars or tank trucks, deld.

Phenol, 90 per cent grade	15.50
Per net ton bulk, f.o.b. cars or trucks, plant	
Ammonium sulfate, regular grade	$32.00

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MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c, less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). SM x D, carload bulk 20.05c per lb of alloy, carload packed, 21.25c, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 13.60c per lb contained Si. 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices. **65% Ferrosilicon:** Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3½ lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l. bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). C.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l.; bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.1% max). Ton lots 2" x D, $3.45 per lb. of contained Cb; less ton lots $3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Carlot bulk 19.25c per lb of alloy, c.l. packed ½ in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

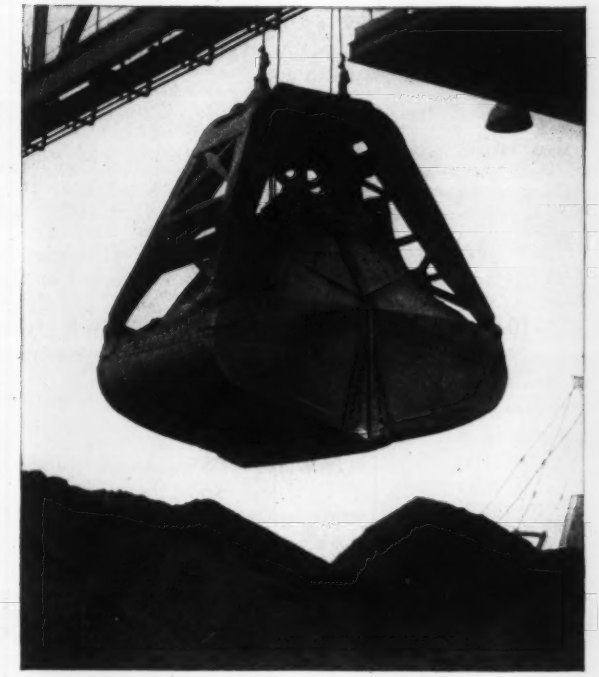
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.



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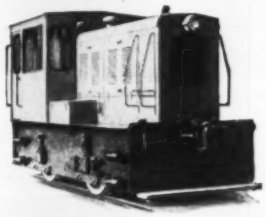

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Scrap Price Slips in Dull Market

STEEL's composite on No. 1 heavy melting grade dips to $34.33, off 34 cents in week. Weakness is also reflected in low prices bid on monthend automotive lists

Scrap Prices, Page 138

• **Chicago** — Several open hearth grades of scrap have slipped another $1 a ton. Blast furnace and railroad grades are holding, and the cast grades show a firming tendency. Most observers expect the market to lack spark until the steel industry labor issue is resolved.

May scrap requirements of the mills are arranged for, and it is unlikely that June will see enough action to revitalize the market. Foundry activity is picking up with fair vigor, and the melting rate is rising. The market for castings over the next several months is considered promising.

• **Detroit** — Monthend auto lists closed lower, with tonnage offerings 10 to 15 per cent larger than at the end of March. Cadillac bundles went for $34.10.

Dealers say they can buy turnings for $6 to $7 a ton.

Cast iron grades dropped in sympathy with the steel grades, and it looks like these prices will stay relatively low until the 1960 auto programs start breaking in the fall.

• **Pittsburgh**—A purchase of No. 2 bundles by a major consumer boosted the price of local scrap to $26 a ton (up $1). Another mill recently paid $25 for local material and $27 for remote scrap, so the latest buy split the difference. Fisher Body Div., General Motors Corp., sold its factory bundles to brokers for $40.50 f.o.b. plant, $2.50 less than this type bundle brought a month ago.

• **Philadelphia**—Relative steadiness prevails in the market, and some trade leaders think the downtrend has about reached bottom. Domestic buying is spotty, but strength is being derived from export demand for No. 1 heavy melting, No. 2 heavy melting, and No. 2 bundles. A cargo and a half recently left here, and two more cargoes are scheduled to leave before the end of this month.

• **New York**—With domestic activity light and export demand spotty, scrap brokers have reduced their buying prices on several grades. They have lowered offers $1 a ton on No. 1 heavy melting and No. 1 bundles to $26-$27. They have made similar cuts on all grades of borings and turnings, machine shop being quoted $9-$10, mixed borings and turnings $12-$13, and short shoveling turnings $13-$14.

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The cast grades are firm. Stainless steel scrap prices are unchanged, but the market tone is easy.

• **Cleveland**—The market is lower—but how much is difficult to determine because bidding on month-end auto lists is not completed. Early bidding indicated the auto steel would go at prices $3 to $5 a ton under those paid at the end of March. Dealer scrap will reflect the decline on the auto lists. Mill buying continues limited.

• **Youngstown**—The market continues in the doldrums, and there is little prospect for any important pickup in buying until the steel labor situation is clarified. A long strike this summer will back up more scrap in pipelines.

• **Buffalo**—The market fell another $2 a ton late in April on orders placed by a leading consumer who normally enters the market at the start of the month. Among leading mill grades down $2 are No. 1 heavy melting at $32-$33, No. 2 heavy melting at $27-$28, and No. 2 bundles at $22-$23. It's also reported a leading user of cast scrap paid $47 for the cupola grade, off $1 from the previous sale.

Vessel scrap is starting to move into this market in heavy volume; consumers will receive large tonnages during May and June.

• **Cincinnati**—District steel mills are expected to enter the market shortly for spot tonnages. One large producer who'll be largely unaffected in event of a steel strike, is thought likely to order sizable tonnages. The feeling persists that the market has not yet hit bottom—that prices can still drop another $1 to $2 a ton.

• **St. Louis**—The scrap market continues inactive. Dealers' yard receipts are off because of the depressed prices. Railroads are balking at current offers. No. 1 railroad heavy melting and rerolling rails dropped $2 a ton last week. The mills are buying a little material, but not enough to stiffen prices.

• **Birmingham** — Limited amounts of electric furnace and cast iron scrap were moved last week at prices established early in April. Attempts of some foundries to place orders at lower prices were resisted by dealers. Exporters have resumed buying. Several vessels are scheduled to take on cargoes at South Atlantic and Gulf ports in May, but their destinations have not been announced.

• **Houston**—Border scrap is moving again. Brokers are quoting $36.50 on No. 1 heavy melting and $33.50 on No. 2 heavy melting (delivered border points) on a new order placed by a major Mexican mill. It has been out of the market for some time. Activity in the Houston area, however, is limited. Final shipments are being made on an order that expires May 15.

The Houston mill recently lowered its buying prices $2 a ton on the heavy melting grades. A second Texas mill is expected to re-enter the market shortly.

Exporters are accumulating scrap in various Gulf ports. The most solid export quotations are those for f.a.s. delivery Port Allen (Baton Rouge, La.) at $36 for No. 1 heavy melting and $33 for No. 2 heavy melting.

The Texas House of Representatives, barraged with protests from the scrap industry, killed a proposal for a 5 per cent tax on scrap receipts.

• **Los Angeles**—Demand is holding up fairly well, but dealers anticipate a slump in requirements this month, accompanied by price declines. The mills are still depending heavily on their inventories, and dealers' stocks are rising.

• **Seattle**—Dealers say the market's tone is weaker, but export tonnage is accumulating at tidewater for shipment to Japan. In the absence of new Japanese business, however, the market outlook is cloudy.

• **San Francisco**—Mills are holding off on large purchases of scrap, but the price structure is firm.

Plates . . .

Plate Prices, Page 126

Most platemakers are sold out for this quarter—in some cases they're oversold. Sellers of sheared plates estimate they'll have carryover going into third quarter. Some think the tonnage overflow will equal two weeks' production. In a number of instances, mills are behind on their May-June sheared plate schedules. Their universal plate schedules are filled through the rest of this quarter.

Some third quarter buying is reported but, in general, it is not particularly heavy, with the result not much canceling of tonnage is likely in event a steel strike is averted.

Pipelinework, railroad equipment requirements, heavy building construction, and tankwork are among

(*Please turn to Page* 143)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, April 29, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Apr. 29	$34.33
Apr. 22	34.67
Mar. Avg.	40.40
Apr. 1958	33.08
Apr. 1954	25.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	32.00-33.00
No. 1 dealer bundles	38.00-39.00
No. 2 bundles	*25.00-26.00*
No. 1 busheling	36.00-37.00
No. 1 factory bundles	*42.00-43.00*
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Cut structurals:	
2 ft and under	46.00-47.00
3 ft lengths	45.00-46.00
Heavy turnings	34.00-35.00
Punchings & plate scrap	46.00-47.00
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	45.00-46.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	46.00-47.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	52.00-53.00
Railroad specialties	47.00-48.00
Angles, splice bars	51.00-52.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	120.00-125.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	*34.00-35.00*
No. 1 hvy melt., dealer	*31.00-32.00*
No. 2 heavy melting	*28.00-29.00*
No. 1 factory bundles	*37.00-38.00*
No. 1 dealer bundles	33.00-34.00
No. 2 bundles	22.00-23.00
No. 1 busheling, indus.	*34.00-35.00*
No. 1 busheling, dealer	*31.00-32.00*
Machine shop turnings	15.00-16.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals, 3 ft	*40.00-41.00*
Punchings & plate scrap	*41.00-42.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Stove plate	*42.00-43.00*
Unstripped motor blocks	*36.00-37.00*
Clean auto cast	*52.00-53.00*
Drop broken machinery	*52.00-53.00*

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
R.R. malleable	56.00-57.00
Rails, 2 ft and under	52.00-53.00
Rails, 18 in. and under	53.00-54.00
Angles, splice bars	48.00-49.00
Axles	*64.00-65.00*
Rails, rerolling	57.00-58.00

Stainless Steel Scrap

18-8 bundles & solids	*215.00-220.00*
18-8 turnings	*115.00-120.00*
430 bundles & solids	120.00-125.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	*26.00-27.00*
No. 1 busheling	*35.00-36.00*
No. 1 bundles	*35.00-36.00*
No. 2 bundles	23.00-24.00
Machine shop turnings	17.00-18.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Low phos.	38.00-39.00
Electric furnace bundles	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00

CLEVELAND

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	*37.00-38.00*
No. 1 bundles	*33.00-34.00*
No. 2 bundles	24.00-25.00
No. 1 busheling	*33.00-34.00*
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	35.00-36.00
Cut structurals, plates 2 ft and under	42.00-43.00
Low phos, punchings & plate	*34.50-35.50*
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	*34.50-35.50*

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	38.00-39.00
Heavy breakable cast	38.00-39.00
Stove plate	44.00-45.00
Unstripped motor blocks	33.00-34.00
Brake shoes	36.00-37.00
Clean auto cast	50.00-51.00
Burnt cast	37.00-38.00
Drop broken machinery	50.00-51.00

Railroad Scrap

R.R. malleable	65.00-66.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	46.00-47.00
Railroad specialties	48.00-49.00
Uncut tires	42.00-43.00
Angles, splice bars	51.00-52.00
Rails, rerolling	58.00-59.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	115.00-125.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	23.00
No. 1 busheling	37.00
Machine shop turnings	16.00
Short shovel turnings	18.00

Cast Iron Grades

No. 1 cupola	50.00
Charging box cast	42.00
Heavy breakable cast	40.00
Unstripped motor blocks	41.00
Clean auto cast	50.00
Stove plate	45.50

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00*
Rails, 18 in. and under	*49.00*
Rails, random lengths	*42.50*
Rails, rerolling	*54.00†*
Angles, splice bars	44.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	21.00-22.00
No. 1 busheling	30.00-31.00
Cast iron borings	14.00-15.00
Machine shop turnings	22.00-23.00
Short shovel turnings	23.00-24.00
Bars, crops and plates	40.00-41.00
Structurals & plates	39.00-40.00
Electric furnace bundles	36.00-37.00
Electric furnace:	
2 ft and under	34.00-35.00
3 ft and under	33.00-34.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	52.00-53.00
Rails, random lengths	41.00-42.00
Angles, splice bars	43.00-44.00

PHILADELPHIA

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
No. 1 busheling	35.00-36.00
Electric furnace bundles	38.00-39.00
Mixed borings, turnings	20.00†
Short shovel turnings	23.00-24.00
Machine shop turnings	19.00†
Heavy turnings	32.00-33.00
Structurals & plate	40.00-42.00
Couplers, springs, wheels	42.00-43.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	43.00
Drop broken machinery	49.00-50.00
Malleable	67.00-68.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	24.00-25.00
No. 1 bundles	*26.00-27.00*
No. 2 bundles	17.00-18.00†
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*12.00-13.00*
Short shovel turnings	*13.00-14.00*
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	85.00-90.00

BUFFALO

No. 1 heavy melting	*32.00-33.00*
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	*32.00-33.00*
No. 2 bundles	*22.00-23.00*
No. 1 busheling	*32.00-33.00*
Mixed borings, turnings	19.00-20.00
Machine shop turnings	17.00-18.00
Short shovel turnings	21.00-22.00
Cast iron borings	19.00-20.00
Low phos structurals and plate, 2 ft and under	*41.00-42.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*46.00-47.00*
No. 1 machinery	*50.00-51.00*

Railroad Scrap

Rails, random lengths	*43.00-44.00*
Rails, 3 ft and under	*49.00-50.00*
Railroad specialties	*41.00-42.00*

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	27.50-28.50
No. 1 bundles	34.00-35.00
No. 2 bundles	21.00-22.00
No. 1 busheling	34.00-35.00
Machine shop turnings	*15.00-16.00*
Mixed borings, turnings	*15.00-16.00*
Short shovel turnings	*17.00-18.00*
Cast iron borings	*16.50-17.50*
Low phos., 18 in.	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	43.00-45.00
Heavy breakable cast	39.00-40.00
Charging box cast	38.00-39.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
Rails, 18 in. and under	54.00-55.00
Rails, random lengths	47.00-48.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	22.00†
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	41.00

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks	35.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	*22.00-23.00*
No. 1 bundles	26.00-27.00
No. 1 busheling	26.00-27.00
Machine shop turnings	8.00-9.00
Short shovel turnings	*11.00-12.00*
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	*17.00-18.00*
No. 1 bundles	*28.00-29.00*
No. 2 bundles	*16.00-17.00*
No. 1 busheling	*26.00-27.00*
Machine shop turnings	*10.00-11.00*
Mixed borings, turnings	*10.00-11.00*
Short shovel turnings	*11.00-12.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Stove plate	30.00-31.00
Charging box cast	31.00-32.00
Heavy breakable	31.00-32.00
Unstripped motor blocks	19.00-20.00
Clean auto cast	43.00-44.00

SEATTLE

No. 1 heavy melting	37.00
No. 2 heavy melting	34.00
No. 1 bundles	29.00†
No. 2 bundles	26.00
Machine shop turnings	17.00
Mixed borings, turnings	17.00
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	34.00
Heavy breakable cast	28.00†
Unstripped motor blocks	26.00
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	35.00
No. 2 bundles	17.00
Machine shop turnings	15.00
Shoveling turnings	18.00
Cast iron borings	18.00
Cut structurals and plate 1 ft and under	49.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	41.00

SAN FRANCISCO

No. 1 heavy melting	36.00
No. 2 heavy melting	33.00
No. 1 bundles	34.00
No. 2 bundles	22.00
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Cast iron borings	16.00
Heavy turnings	16.00
Short shovel turnings	16.00
Cut structurals, 3 ft	42.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

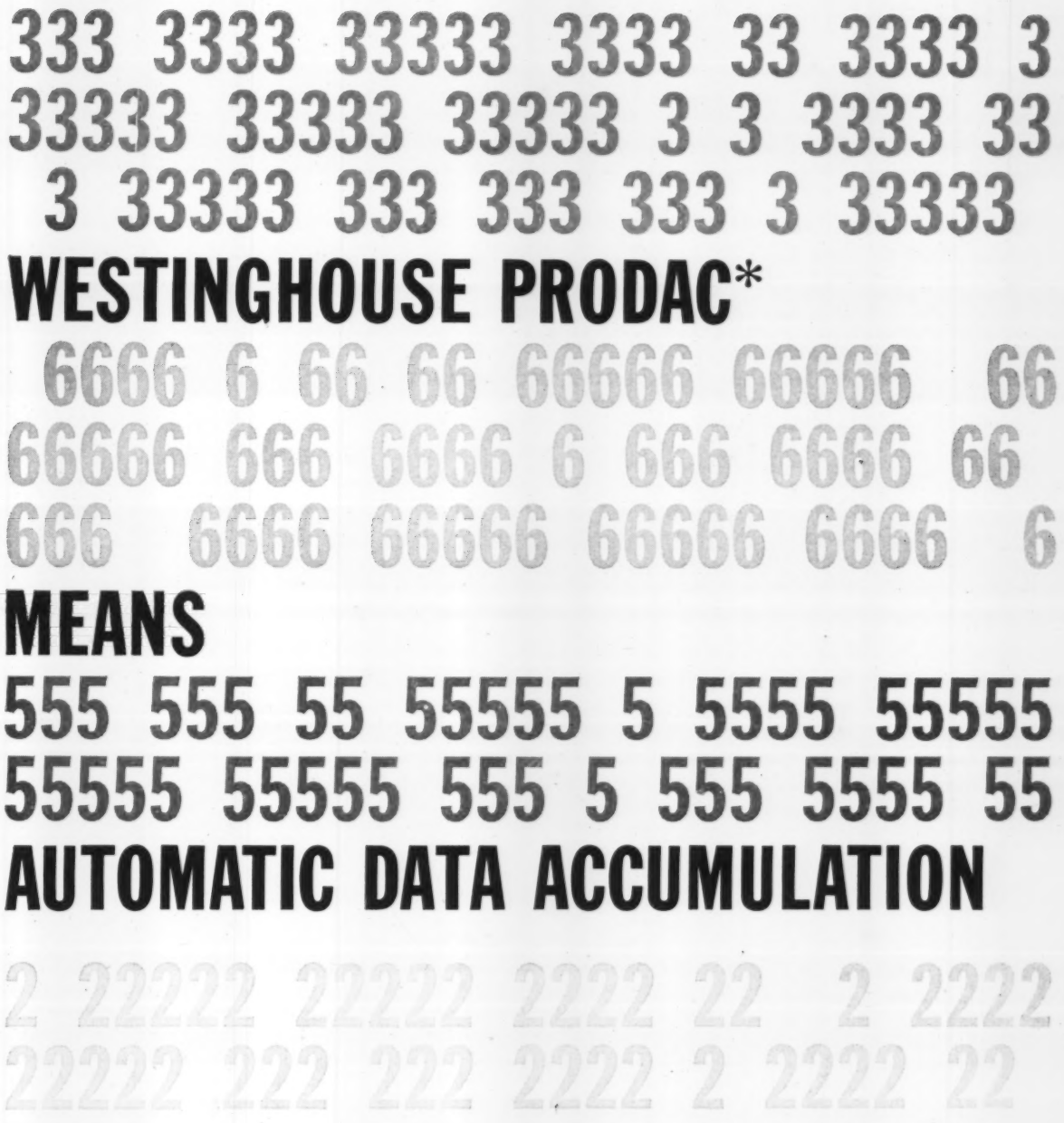
(Brokers' buying prices)

No. 1 heavy melting	32.25
No. 2 heavy melting	28.25
No. 1 bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Mixed borings, turnings	13.00
Busheling, new factory:	
Prepared	32.25
Unprepared	26.25
Short steel turnings	17.00

Cast Iron Grades‡

No. 1 machinery cast	46.50-48.00

†Nominal.
‡F.o.b. Hamilton, Ont.



. . . keeps a permanent record of each foot of production . . . automatically registers all pertinent information and spots defect locations on the full production run. This is but one of the ways Westinghouse PRODAC† is now helping bring about the "mill of the future" today through completely automatic data accumulation systems.

Westinghouse has service-proven PRODAC installations that economically automate slabbing mills, blooming mills, reversing roughers, stock house materials handling and many other mill applications.

By specifying Westinghouse PRODAC for your mill, you open the door to many new cost-saving benefits which are unobtainable with conventional controls. For example, PRODAC assures the most consistent standards of quality control at the highest rates of production speed . . . coordinates operation of all machines at the over-all maximum efficiency . . . holds maintenance to a minimum, and practically eliminates control failures . . . gives you a "building block" design which provides flexibility required for future mill automation.

The entire team of Westinghouse PRODAC engineers is at your service to help you determine exactly where and how PRODAC can benefit you. Your Westinghouse sales engineer can give you complete information, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-22124

†Trade-Mark

*PROGRAMMED DIGITAL AUTOMATIC CONTROL

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV MONDAYS

UN Metal Talks Underway

Lead and zinc producing and consuming nations meet to discuss major problems and seek solutions. Little hope is held for major accord. Aluminum shipments up

Nonferrous Metal Prices, Pages 142 & 143

TODAY (May 4), representatives of all nations interested in the world-wide marketing of lead and zinc will begin a four-day "junior summit" meeting on how to solve common problems.

They'll join delegates of the 20 major lead and zinc producing countries who have been in session since last Tuesday at the United Nations in New York City. The 20 were remarkably unsuccessful in reaching accord in two previous meetings held last year—one in Geneva and one in London.

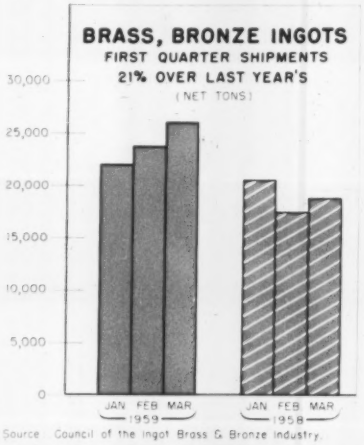
• **Big Decision**—Insiders say the principal point delegates will have to agree on is whether or not supply and demand are out of balance.

That shouldn't be difficult. When the Korean War broke out, the U. S. encouraged expansion and reopening of mines, here and abroad. With the end of hostilities, demand naturally slackened.

The story doesn't end here. Over a short period, these events have occurred to weaken the world market: Government contracts to buy metal for the national stockpile ended; the barter program which had siphoned off thousands of tons from the world market became virtually ineffective; both metals, particularly lead, saw competitive materials eat deeply into some traditional markets; a business recession in the U. S. and other parts of the world lowered demand.

The result was a rise in stocks and a falling price pattern. U. S. producers sharply curtailed output. Some pickup has been evident since quotas went into effect last fall but operations are still at a reduced level.

• **One Sided**—Conversely, foreign producers have done little to lower output even though the consensus is this will eventually have to be done to put the market on a sound basis (see Page 47). Listen to J. D. MacKenzie, board chairman and president of American Smelting & Refining Co.: "At present depressed prices for lead and zinc in world markets, even the lowest cost mines are now making only nominal profits. Most of the world's production is either on a break-even basis or is actually being produced at a loss. Under the circumstances, curtailment of production to a level in line with consumption is the only means by which a sounder price structure can be achieved."



Source: Council of the Ingot Brass & Bronze Industry

In line with that philosophy, Asarco plans a production cutback at properties in Newfoundland and Australia during the summer and has instructed its managers in Mexico and Peru to investigate ways of curtailing operations in those countries.

Evidently more people are beginning to share that attitude. The large Canadian producer, Consolidated Smelting & Refining Co. of Canada Ltd., recently announced that beginning June 1 it is trimming its output by 15,000 tons of lead and 20,000 tons of zinc annually.

• **Rest of Agenda**—Sure to be discussed will be formation of an intergovernmental study group. Its purpose: To collect and distribute world statistics on the two metals and make recommendations on ways to cure the current malady.

Discussion is expected on the possibilities of some sort of voluntary international control plan such as limiting exports and production for a specified period—say a year.

• **Chances**—It's inconceivable that delegates won't agree there is an overproduction problem. Odds are good some sort of machinery will be set up to form an embryo study group.

But there's little hope of adoption of an export-production plan agreeable to all. If other meetings are any criteria, the atmosphere will be as chilled as the wind that sweeps in from the adjoining East River when this subject is broached. Any production limitation would probably come as the result of individual decisions rather than an international plan.

NONFERROUS PRICE RECORD

	Price Apr. 29	Last Change	Previous Price	Mar. Avg	Feb. Avg	Apr., 1958 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	24.000
Copper	31.50-32.50	Apr. 21, 1959	31.50-32.00	32.031	30.159	24.323
Lead	11.30	Apr. 20, 1959	10.80	11.238	11.368	11.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	102.875	Apr. 29, 1959	102.75	103.000	102.364	93.021
Zinc	11.00	Feb. 25, 1959	11.50	11.000	11.409	10.000

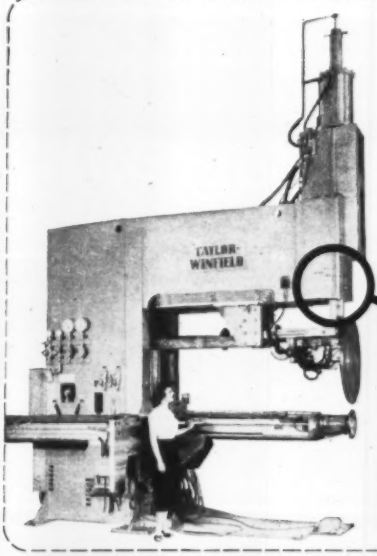
Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig 99.8%, Velasco, Tex.

BEARING TIPS
by McGill

McGILL *CAMROL*® bearings cost less to increase efficiency of cam follower, guide and support roller applications

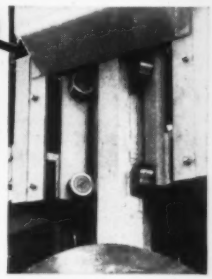
Using CAMROL CF and CYR (cam yoke roller) bearings eliminates the inconvenience of obtaining and processing component parts for built up followers. It costs less to select the proper size CAMROL bearing from stock than machine and assemble loose bolts, bushings, bearings, and snap rings.

CAMROL bearings are engineered and precision built to carry heavier loads with greater accuracy and alignment. An extra heavy outer race with full roller complement on a flanged stud (or inner for CYR) offers high load and shock capacity. Smooth, dependable action with low starting friction is assured through longer machine life. Available sealed also.



Improved performance, reduced friction and greater accuracy as ram guides in huge welder

The long ram stroke and large diameter welding wheel impose severe requirements on the CAMROL equipped ram guiding device of this resistance seam welder manufactured by the TAYLOR-WINFIELD CORPORATION.



The CAMROLS provide greater accuracy with less friction than was experienced with a round ram and bushing type bearing formerly used. Lubrication is simplified, maintenance reduced and performance is excellent.

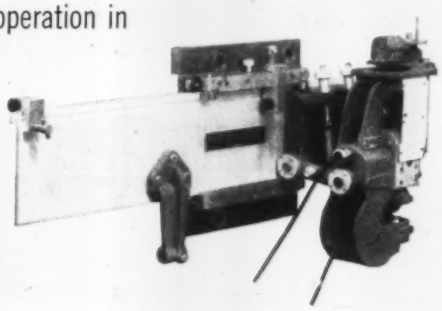
The welder has a throat depth of 84" and a 12" vertical stroke of the upper ram carrying the large diameter welding wheel.

CAMROL® bearings take severe impact loads in hydraulic snubbing hooks

CAMROL CF bearings are used as hook positioner rollers in BYRON JACKSON HYDRAPLEX HOOKS. These heavy-duty (500 ton capacities) hooks are used in oil well drilling work. The hook positioner mechanism includes CAMROL cam followers that travel on a hardened cam track when the load is released to return the hook to its original position. The CAMROL bearings take severe impact loads in the thousands of pounds.

Ease of assembly and smooth operation in electrolimit continuous gage

PRATT & WHITNEY CO., INC., manufacturers of the ELECTROLIMIT CONTINUOUS GAGE shown here have cut costs through the elimination of built up followers requiring ball bearings, shafts, spacers and milling slots by using sealed CAMROL bearings. They are prelubricated and protected. The CAMROL bearings which travel along a vertical cross slide rail, provide smooth, easy action as the gage slides onto strip material running through the mill. No bearing replacement reported in over 10 years.



engineered electrical products

McGILL®

precision needle roller bearings

SEND FOR CATALOG No. 52-A

MULTIROL — GUIDEROL — CAMROL

McGILL MANUFACTURING COMPANY, INC., BEARING DIV., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.30 per lb deld.

Cobalt: 97.99%, $1.75 per lb for 500-lb keg, $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 31.50 deld.; custom smelters, 32.50; lake, 31.50 deld.; fire refined, 31.25 deld.

Germanium: First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 35.00-37.00 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 nom. per troy oz.

Lead: Common, 11.30; chemical, 11.40; corroding, 11.40, St. Louis, New York basis, add 0.20.

Lithium: Cups or ingots, 50-100 lb, $10 per lb, f.o.b. Minneapolis; 100-500 lb, $9.50 per lb deld.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-245 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $18-20 per troy oz.

Platinum: $77-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 102.875.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 14.00; No. 5, 13.75 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass No. 115, 30.25; tin bronze, No. 225, 41.25; No. 245 ,35.00; high-leaded tin bronze, No. 305, 34.50; No. 1 yellow, No. 405, 24.75; manganese bronze, No. 421, 27.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.91, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.89, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 36.855; l.c.l., 37.48. Weatherproof, 20,000-lb lots, 37.42; l.c.l., 38.17.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.50-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.080	45.70-62.00	41.00-45.70
0.080-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	69.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	84.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-75.30	90.60-91.30
36-38	66.10-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 24.50-25.00; No. 2 heavy copper and wire, 22.50-23.00; light copper, 20.50-21.00; No. 1 composition red brass, 19.00-19.50; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 31.50c)		
	Sheets, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	55.63b	52.86c	....	55.82	27.500	27.500	26.750
Yellow Brass	48.24	32.73d	48.78	51.65	20.625	19.750	18.750
Low Brass, 80%	51.23	51.17	51.77	54.54	23.250	23.000	22.500
Red Brass, 85%	52.29	52.23	52.83	55.60	24.250	24.000	23.500
Com. Bronze, 90%	53.90	53.84	54.44	56.96	25.125	24.875	24.375
Manganese Bronze	56.54	50.14	60.62	....	19.125	18.875	18.375
Muntz Metal	50.85	46.16	....	....	19.375	19.125	18.625
Naval Brass	52.80	46.61	59.36	56.21	19.125	18.875	18.375
Silicon Bronze	60.67	59.86	60.21	78.35	27.000	26.750	26.000
Nickel Silver, 10%	63.82	66.15	66.15	....	25.500	25.250	12.625
Phos. Bronze	75.34	75.84	75.84	77.02	28.625	28.375	25.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 18.00-18.50; new brass clippings, 17.50-18.00; light brass, 13.00-13.50; heavy yellow brass, 14.00-14.50; new brass rod ends, 15.00-15.50; auto radiators, unsweated, 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe, 15.50-16.00.

Lead: Soft scrap lead, 7.50-8.00; battery plates, 2.25-2.50; linotype and stereotype, 8.75-9.25; electrotype, 7.25-7.75; mixed babitt, 8.75-9.25.

Monel: Clippings, 26.00-28.00; old sheets, 23.00-25.00; turnings, 20.00-21.00; rods, 26.00-28.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 38.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 3.00-3.25; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.75-10.25; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.75-12.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.75-17.25; segregated high copper clips, 15.75-16.25; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.25-15.75.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.50-15.00; segregated high copper clips, 13.00-13.50; mixed low copper clips, 13.50-14.00; mixed high copper clips, 12.50-13.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 57.50; light scrap, 52.50; turnings and borings, 37.50.

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 26.00; light copper, 23.75; refinery brass (60% copper) per dry copper content, 25.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 26.00; light copper, 23.75; No. 1 composition borings, 20.50; No. 1 composition solids, 21.00; heavy yellow brass solids, 15.00; yellow brass turnings, 14.00; radiators, 16.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.30.

Copper: Flat-rolled, 47.79; oval, 46.00, 5000-10,000 lb; electrodeposited, 40.50, 2000-5000 lb lots; cast, 43.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; wire, 27.00; No. 2 heavy copper and wire, 26.00; light copper, 23.75; refinery brass deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 121.50; 200-499 lb, 120.00; 500-999 lb, 119.50; 1000 lb or more, 119.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.30 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 15.30; 2000-5900 lb, 13.30; 6000-11,900 lb, 13.05; 12,000-22,900 lb, 12.80; 23,000 lb or more, 12.30.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 80.10; 100-600 lb, 70.70; 700-1900 lb, 68.00; 2000-9900 lb, 66.10; 10,000 lb or more, 64.80.

Stannous Chloride (Anhydrous): 25 lb, 155.60; 100 lb, 150.70; 400 lb, 148.30; 800-19,900 lb, 107.40; 20,000 lb or more, 101.30.

Stannous Sulphate: Less than 50 lb, 140.70; 50 lb, 110.70; 100-1900 lb, 108.70; 2000 lb or more, 106.70.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 137*)

major current consuming outlets. Shipwork continues active, but the trend is downward. Fabricating shops, including weldment builders, do not have heavy backlogs, but tank requirements are heavier, notably for government fuel storage where terminal facilities are needed.

Bethlehem Steel Co., Bethlehem, Pa., will fabricate 21,000 linear ft, 30 in. caisson pipe for the Prudential Center foundations, Boston.

Distributors . . .

Prices, Page 131

Proof that steel supply is adequate to cover needs: Absence of a run on steel service centers for such products as cold rolled and galvanized sheets. Apparently, users haven't come to the point where they want to pay the higher distributor prices for material for inventory. They may take that action, however, as the end of the current steel contract approaches.

Business at steel service centers is improving, but only at a modest rate which closely parallels operations in the metalworking industries. Bookings have registered some of the largest gains in Chicago due to the wide diversification in the area and the fact that more steel is used there than is locally produced.

A healthy upturn is also reported

CLASSIFIED ADVERTISING

Help Wanted

ROD & STRIP ROLLING MILL SUPT. for non-ferrous & stainless wire manufacturer in Newark, N. J. area. Practical experience in hot rolling mill desirable. Full responsibility for all related operations. Send complete record to Box 751, STEEL, Penton Bldg., Cleveland 13, Ohio.

EXPERIENCED SHEET PRODUCTION SUPERINTENDENT. Immediate opening for superintendent with background in aluminum strip and sheet rolling. Prefer Mechanical Engineering Degree, or equivalent, with 3-4 years experience. Must have working knowledge of plant layout and auxiliary equipment. Modern installation in growing Mid-southern community. Independent aluminum production. In resume give age, family, references, experience and salary requirement. Enclose photograph. Reply Box 753, STEEL, Penton Bldg., Cleveland 13, Ohio.

MECHANICAL ENGINEER

Large manufacturer (approximately 2500 employees) of specialty steel products including closed and open die heavy press forgings, forged and rolled rings and flanges, desires graduate mechanical engineer with 5 to 10 years' experience in tool, die, jig, and fixture design to head this engineering function. Salary commensurate with ability. When applying give educational background, experience and salary requirements. Reply Box 758, STEEL, Penton Bldg., Cleveland 13, Ohio.

Mechanical Engineer

Desire graduate M. E. expert and experienced in tool design and manufacturing operations. Must enjoy flexible, creative work constantly facing him with the creative demands of new development and applications in material handling, tool design, and equipment utilizations. General supervisory and production experience desirable. Should be interested in keeping abreast of developments in modern metallurgy and advanced metal forming (stamping and fabrication) practices. Excellent opportunity for young man (28-35) now in $7,000-$9,000 range to grow rapidly through his basic contribution to a steadily expanding (non-auto) company in St. Louis. All replies kept strictly confidential. Please address resumes to: D. M. More, 9827 Clayton Road, St. Louis 17, Missouri.

Representatives Wanted

WANTED: MANUFACTURERS' AGENT for New England territory to represent light hammer closed die forge plant. Please send particulars and lines now represented. Box 760, STEEL, Penton Bldg., Cleveland 13, Ohio.

BUILDINGS FOR SALE

Total of 3-Widths of 58', 78', and 31', length of 600'.2—with crane runways, 1—Capable of handling 80 Ton Crane. Located on siding; ready for dismantling; ideal for heavy industry.

Reply Box 756, STEEL
Penton Bldg., Cleveland 13, Ohio

FOR SALE

600 Ton Elm Hyd. Press, model 6343
67½" x 52½" between post
48 x 45", stroke 38" approx.
Max. daylight 5', double cushions
Draw 18"
T. R. WIGGLESWORTH MACHINERY CO.
Route 8 **Bedford, Ohio**

GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 5,000 new motors in stock from 1HP to 200HP. Special low prices
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We are interested in purchasing
SURPLUS STEEL and ALUMINUM
Sheet, strip, bars, tubing and pipe
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2900 W. PETERSON ROAD
CHICAGO 45, ILL.

HOW TO BEAT THE HEAT

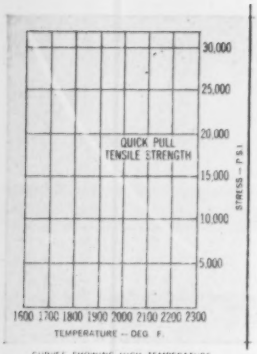
for strong high alloy requirements in the 1,800° to 2,300° F range!

DURALOY HOM*

*Covered by U.S. Patents

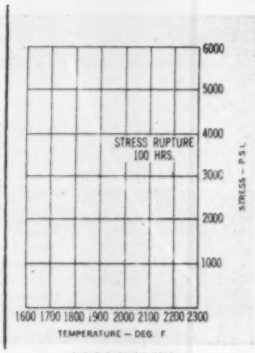
casting alloy

Duraloy "HOM" is a special high nickel alloy developed to produce castings that meet high temperature requirements, especially when castings are subject to oxidizing atmospheres.



CURVES SHOWING HIGH TEMPERATURE SHORT-TIME TENSILE STRENGTH OF DURALOY HOM

CURVES SHOWING CREEP STRESS FOR CREEP RATE OF 1% IN 10,000 HOURS AND RECOMMENDED DESIGN STRESS FOR DURALOY HOM



CURVE SHOWING STRESS TO RUPTURE AT 100 HOURS FOR DURALOY HOM

Castings of DURALOY "HOM" are now being produced by our three methods: static, centrifugal and shell molded. Write today for additional information on this versatile new alloy.

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

in the Philadelphia district, attributed in part to the booked-up position of an increasing number of mills. One distributor received an order for 60,000 lb of bars. He says: "The mills have to be tight before we get anything like that."

The market in the Southwest is firmer. For the last 18 months or so distributors have been losing orders to importers of steel, but a gradual rise in prices of foreign steel and more extended deliveries from overseas during the last few weeks have tended to stabilize bids.

More Oxygen at Clairton

U. S. Steel Corp. is obtaining oxygen from a new generating plant (capacity: 34 tons a day) at its Clairton (Pa.) Steel Works. About 80 per cent will go to open hearths for steelmaking, the balance is for cutting and scarfing torches and general plant use. The plant was built by Air Products Inc., Allentown, Pa., which owns and operates it. F. A. Dudderar is general superintendent of the Clairton Works.

Some Import Steel Items Are in Stronger Demand

Reflecting tight domestic supplies, demand for imported sheets is increasing. Prices on hot-rolled sheets from Europe are up 5 cents per 100 lb. Quotations on cold rolled are unchanged, but they are strong.

Foreign plates (basic and bessemer) are moving better, partly because of more stringent supply on this side and a fairly substantial reduction in imported plate prices.

While trading is brisk, business in merchant bars is slower. This is due in some measure to extended delivery promises by European mills. However, there is less buying pressure, and in the Gulf and West Coast areas prices are off 10 to 20 cents per 100 lb.

Lagging demand for bright common wire nails from Europe has led to a drop in the market at all ports in this country—20 cents at North Atlantic, 10 cents at South Atlantic, 2 cents at Gulf, and 25 cents at west coast ports.

Demand for tubular products is slow.

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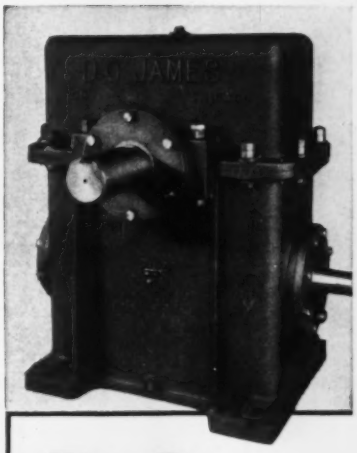

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THE D.O.James Worm Gear Speed Reducers cover a wide range of ratios and horsepowers . . . and feature the advantages of right angle shaft arrangement, minimum of moving parts, accurate meshing of precision produced worm gearing, anti-friction bearing mountings and tested lubrication. The proven efficiency, long life and compactness of this type of gear reduction makes them the "MUST Reducer" for many power saving installations.

They are designed and built by an organization that has been making Gears and Gear Reducers for Seventy Years. May we serve you?

Extensive Worm Gear Making Facilities

D. O. James Worm Gear teeth are generated on tangential feed hobbing machines by tapered and ground hobs. We make worm gears from 1" to 80" in diameter and from 24 DP to 1 DP.

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GEAR MANUFACTURING CO.
1140 W. Monroe Street, Chicago, Illinois

Since 1888

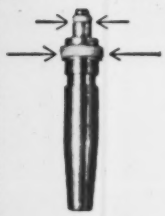
MAKERS OF EVERY TYPE OF GEAR AND GEAR SPEED REDUCER

SEND FOR CATALOGS

Catalogs and price lists covering worm gear speed reducers (the right angle drive) are available to power transmission engineers. Please request on Company Letterhead — we'll mail your copy at once.

cutting with
natural gas or propane? **TAKE THE FULL SOFT SEAT!**

—new Airco 2000 and 2500 Series Hand and Machine Torches



Only Airco gives you full sealing rings of silicone rubber — for high heat resistance, positive durable seal.

Soft seat can withstand rough handling and abuse.

Only 7 tip sizes cover cutting range ⅛″ to 12″.

Change tips by hand — no wrench.

Triangular stack design of gas tubes in hand torch gives greatest rigidity.

Special oxygen valve permits smooth, ease-on starts required in piercing and cutting.

You've got the *full* soft seat when you use Airco's new premix type 2000 Hand Cutting and 2500 Machine Cutting Torches! Operate with either natural gas, propane, or city gas . . . at low or medium pressure.

Look in the yellow pages of the phone book under "Welding Equipment" for the Authorized Airco Dealer nearest you.

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Cuban Air Products Corporation
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OUR experienced engineers are available to make practical suggestions on the efficient operation and maintenance of your equipment.

Our simple daily cost record determines the most efficient type of abrasives for you to use, and equally important, proves the kind of economies Cleveland Metal Abrasive can offer.

Many customers are already using the Cleveland cost system. Write us today for more information, together with new catalog No. 159, or call our nearest representative.

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1. Realsteel Shot and Grit	2. Pearlitic Malleable	3. Normalized	
4. "A" Iron	5. Hi-Strength "B"	6. Chilled Iron	7. Cut Wire

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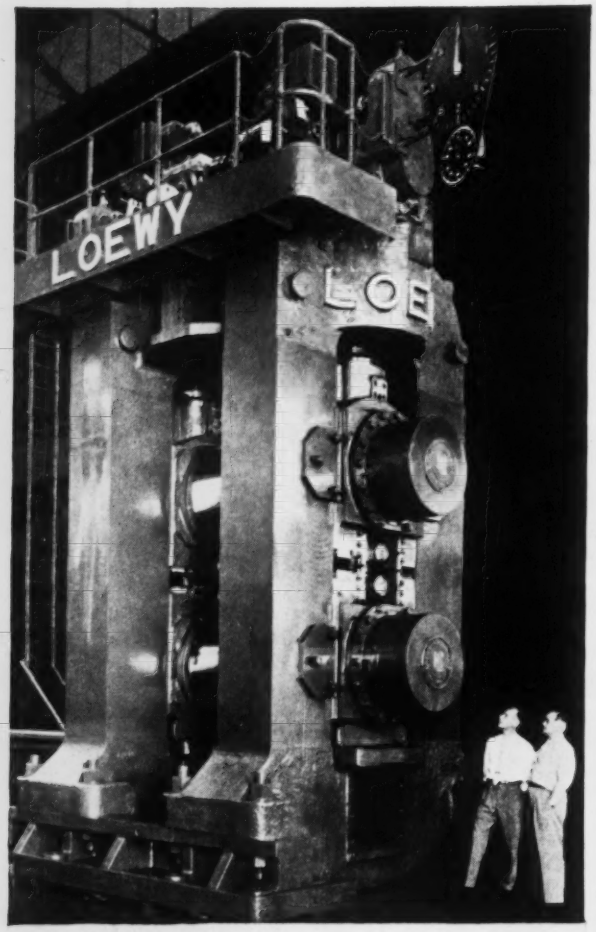
World's Largest Production Capacity



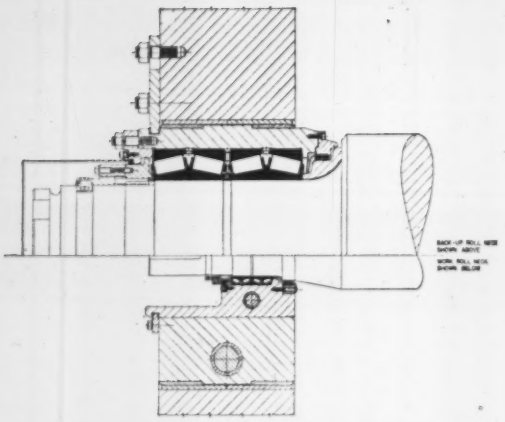
Rolls up to 20″ x 20″ the "hard" way... Timken® bearings take the shock

THIS powerful 4 Hi reversing mill, built by Loewy-Hydropress Division of Baldwin-Lima-Hamilton Corp., is doing its job the "hard" way—rolling small slab ingots of special hard alloys up to 20″ x 20″. To roll them down to .010″ or less takes a lot of force. It's hard work. This mill operates at a separating force of 140,000 lb. per inch of width—at speeds from 75 to 200 fpm. To take the heavy shocks, keep bearing cost down, Timken® tapered roller bearings are used to mount the back-up and work rolls, screwdown drive and screwdown worm gear. 24 Timken bearings all told.

Here are the big reasons why 1008 steel mills use Timken tapered roller bearings on roll necks:

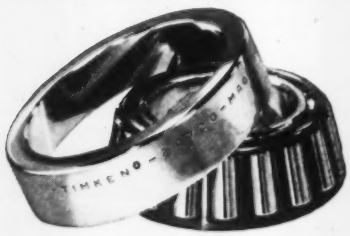
1. Longer life. Tonnage records show that the long life of Timken roll neck bearings keeps bearing cost per ton of steel rolled at rock bottom. **2. Better mill rigidity.** Balanced proportion design of Timken bearings permits larger roll necks than ever before possible with tapered roller bearings. Load ratings are increased up to 40% due to Timken bearings' balanced proportion design. **3. Simplified lubrication.** No complicated systems; Timken bearings permit use of simple grease lubrication. **4. No special thrust bearings needed.** Timken bearings take *both* radial and thrust loads. **5. Steel loss ended in mill stops and starts.** Timken bearings permit starting under full loads. **6. Faster mill rolling speeds** because Timken bearings minimize friction.

Timken bearings make any machine better. And better machines make better products. That's Better-ness. And the trade-mark "TIMKEN" is your symbol of Better-ness. Look for it. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



How **LOEWY-HYDROPRESS** mounts rolls of this 12 x 43 x 42 mill on Timken bearings to take shocks, assure longest, most economical life.

This symbol on a product means its bearings are the best.



BETTER-ness rolls on **TIMKEN**® tapered roller bearings